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THE
KINDERGARTEN SYSTEM
EXPLAINED.

BY

MRS. ADA S. BALLIN.

Editor of "Baby: The Mothers' Magazine,"

AND

MISS ELINOR A. WELLDON,

Government Inspectress of Schools in the Transvaal;
Late Head Mistress of the Kindergarten Training Department of the Ladies' College, Cheltenham.

SECOND EDITION.

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PREFACE TO SECOND EDITION.

DURING the course of more than fifteen years that I have been working for the benefit of the little ones, it has been rendered abundantly evident to me that the process of education becomes infinitely more easy and satisfactory if the principles of the great German philosopher Froebel are adopted, and the children are "educated while they are being amused." The Kindergarten system, rightly understood, is a means of drawing out every faculty of the child, and forming a solid basis for after-education. Used as Froebel designed, Kindergarten teaching should begin at so very early an age that it is really the mother who should, at any rate, initiate it. At present, at the Board Schools, and many Kindergartens, children are admitted at the age of three, but most parents of the upper-middle and upper classes are averse to sending their children to school at so very early an age. There is no reason, however, why this objection should be a bar to the child enjoying the benefits accruing from Kindergarten teaching, and Miss Welldon and I have therefore prepared a handbook which, while based upon the latest scientific teaching in England, America, and on the Continent, is yet so simple as to enable any mother or nurse, who will give a little time and thought to the subject, to educate her child according to this system. The book is primarily intended for mothers and nurses, but is equally useful for the young Kindergarten teacher, and for the benefit of such, Miss Welldon has added to each chapter a number of notes for lessons to be given in class. This book has justified its existence by the fact that the very large first edition has been completely sold out, and it has been necessary to prepare a second edition much sooner than we had expected.

When two authors collaborate, there is generally a considerable amount of curiosity as to how the work is divided. In the present instance this is very easy to explain, as the first part of the book—that dealing with the six gifts—was written by me. It has been revised by Miss Welldon, who has added the notes for the Kindergarten teachers. The remainder of the book has been written by Miss Welldon and revised by me. I am, therefore, confident that I am placing before my readers a work which is thoroughly up-to-date and adapted to the wants of those for whom it is intended, since in her position of Head Mistress of the Kindergarten Training Department of the Ladies' College at Cheltenham—perhaps the largest training college for Kindergarten teachers that there is—Miss Welldon had every opportunity of judging what is necessary for the right understanding and teaching of Froebel's system.

Throughout the book constant references are made to gifts and materials necessary for Kindergarten teaching, and as there is often difficulty in obtaining these at moderate prices, especially in the country, I have made arrangements with Messrs. Hamley Bros., of 64, Regent Street, W., to supply everything that is required, either singly or in sets. (See price list at the end of this volume.)

Properly carried out, Kindergarten teaching is not only of infinite value to the child, but is very delightful for the mother or nurse who watches the gradual unfolding of the baby mind, and the little fingers daily becoming more useful.

It also enables the mother or nurse, without having to constantly rack her brains for novelties, to keep the little ones constantly amused by means of the various sedentary occupations, wisely varied by the active exercises, games, and songs which form so important a part of this system, the object of which is to train the body as well as the mind.

As a means of training for hand and eye, there is no better occupation than clay modelling, treated in Part V., and since the publication of our first edition, the value of Plasticine as a substitute for ordinary clay has been abundantly proved. Plasticine is the invention of a clever sculptor, Mr. Harbutt, of Bath, and is a material which can be moulded by the children's fingers without any of the mess or difficulties inherent to the use of clay. It can be used over and over again, and is highly to be recommended both to amuse and instruct the children. It should also be mentioned that it is certified by the most eminent analysts as being perfectly harmless, and, indeed, ANTISEPTIC in its constitution, and thus an ideal substance for public handling.

ADA S. BALLIN.

18, Somerset Street, Portman Square, W.

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THE

KINDERGARTEN SYSTEM EXPLAINED

CHAPTER I.

INTRODUCTORY.

IN a recent publication a mother gravely stated that the education of the child cannot begin until it is at least three years old. This, however, is obviously a mistaken idea. With the first breath it draws baby begins a course of self-culture, in which it can be greatly assisted by judicious care. The duty of parents and teachers is *to lead out*—*e-ducere*—the mental and bodily faculties of children, so that they may attain the best possible development. The infant begins to take notice, recognising its mother, nurse, feeding bottle, rattle, and so on, when from four to six months old, and during the next few weeks it acquires the power of handling objects and recognising a much larger number. When a new object is given to a baby from eight months to a year old, it is first carried to the mouth, the sense of taste, which is the earliest to be developed, being called upon to tell if it is good to eat; next the infant feels it carefully all over, presses it, and tries to tear it, all the while examining it with watchful eyes. If, in the course of these operations, the object gives forth a sound, this is eagerly listened to, and a repetition is sought. The little one thus naturally exercises all its senses, and gains a practical knowledge of the object in hand, and in so doing it should be left to itself. After providing suitable objects for investigation, the child should be allowed to use them in its own way, and in its own time, the hurry and excitement caused by injudicious interference at this stage only tending to confuse the dawning mind and prevent the acquirement of habits of steady observation. As Emerson has said, "Nature never hurries; atom by atom, little by little, she achieves her work, and to attempt to hasten it can only do harm." The first educational efforts should be mainly negative, and tend to prevent the development of bad habits, to check evil tendencies, and to supply materials for self-culture. The first object-lessons the infant must learn by itself, and it acquires them long before it has learnt even its first words.

The system of so-called *Kindergarten* education planned many years ago by Froebel in Germany, which is now accepted as a valuable system in all civilised parts of the world, was based upon accurate observations of the natural development of the infant mind, and it endeavours to train the senses by giving them suitable occasions for use, to accustom the hands to touch and handle objects with care and precision, and to cultivate habits of observation, truthfulness, kindness, and obedience.

Thoughtless people, among whom I am sorry to have to class a number of teachers of this system, see in the "gifts" which are the means of its practice only a number of toys which serve to amuse the children, and keep them out of harm's way. As a matter of fact, however, these "gifts," as they are called, are the outcome of years of observation and thought on the part of a deeply philosophical man, and of his skilled disciples. If their real educational worth is not appreciated by many mothers and teachers, this is not the fault of the system, but of the ignorance of those who criticise it.

Infant mind is first manifested in taking notice of surrounding objects, and at about the same time the first automatic movements develop into the desire for activity, which finds its gratification in play. Froebel uses play to direct activity and observation into their proper channels, and a brief survey of the purposes which his "gifts" subserve will show the philosophy of his system. His first gift is a coloured ball suspended to a string, which, while rejoicing the heart of the young child, draws his attention to form, colour, texture, elasticity, and the other properties of this attractive object. This ball may be given to infants from eight or ten months, but it does not reach its full utility till nearly a year later, when the child is able to understand verbal commands. In Kindergarten schools, under the teacher's instructions, various movements with the ball are performed by all the children together, and this principle of combined action is very important, as tending to inculcate obedience, to repress selfishness, and to promote those social feelings of kindliness and helpfulness which should actuate man towards his fellows. Each child is also led to wish to do as well as the others, but no undesirable spirit of competition is encouraged. By the use of the ball in the home, mother may teach the baby to know "up" and "down," "right" and "left," "backwards" and "forwards"; to compare it with other round things, and other objects of the same colour, as well as to obey the word of command—a very important matter. In fact, the ball or sphere is in the Froebel system the starting-point of all knowledge.

The second gift is a little box containing a sphere, a cube, and a cylinder neatly cut out of pine wood, and these lead the child to observe differences of form and discover various ways in which he can use his treasures. The third gift is a still more pleasing one, and consists of a cube composed of eight smaller cubes, which can be arranged and combined into all sorts of figures, such as a chair, a flight of steps, and various geometrical forms. Thus unconsciously lessons of geometry and arithmetic are learned, and the child has been led practically to understand fractions without being aware of the fact. The fourth gift is a cube of the same size as the third, but divided into eight oblong pieces, or bricks, and now the opportunities for the exercise of the creative faculty, of ingenuity, and of imagination, are vastly increased, a new impulse to originality is given, and a new series of observations of lines, surfaces, relations, and combinations, is begun. Building and the formation of architectural design, so dear to the infant mind, can now commence in good earnest.

By means of the circles and segments of circles, the sticks and laths, which form some of the later gifts, new facts in geometry and about the relations of objects are learned, and various patterns and figures may be produced. The child next learns plaiting and weaving with coloured papers, which give plenty of scope for the invention of designs, many of which by children from five to seven years old I have greatly admired, and considered well worthy of reproduction by makers of carpets and damasks. After this follow paper-folding and cutting-out, by which further truths of geometry are learnt, while in the latter the child first becomes acquainted with the use of a tool. In both the hand and eye acquire steadiness and accuracy, while habits of neatness are cultivated.

Before the little fingers are able steadily to guide a pencil, the Kindergarten lessons preparatory to the teaching of drawing begin. A sheet of paper or thin cardboard on which an outline—of some house or animal, for example—is printed, is given to the child, who has to trace it out with a succession of holes at equal distances and of equal size, a matter not quite so easy as it may seem to an adult. The pattern is afterwards outlined with coloured silks, sewn through the holes, and the effect of a rather primitive picture is thus obtained, of which, however, the artist is as proud as if it were fitted for the walls of Burlington House. A little six-year old once brought me a whale worked in this fashion for a birthday present, and suggested that I should put it in a gold frame and hang it in my dining-room. When the hand has grown steady enough to use a pencil, a ruled slate and afterwards ruled paper are given, the regular squares preventing the pupil from making very great blunders until lines correct in direction and proportion can be drawn. The next step is to reproduce the geometrical patterns and figures formerly made by the use of the gifts, and drawing from objects is only attempted after long practice in tracing these outlines. Froebel also attached great importance to modelling in clay as a means of teaching the forms of objects and training the eye to accuracy, and the hands to delicacy of touch and adjustment.

As Herbert Spencer says, "Children should be told as little as possible, they should be led to discover as much as possible," and this may be taken as the keynote to the Froebel system, which places the child in such a relation with regard to external objects that he naturally inquires about them, and as verbal explanations are intended to be made subordinate by the teacher to physical demonstrations, what is learnt is learnt thoroughly. The child is made to educate himself in a path prepared for him, which saves him from useless wandering and error, and, most important of all, he must not only know, but must also produce. Although the child taught on this system may appear to know little compared with those who have been taught many words and have got a smattering, however inaccurate, of "show learning," he knows is the fruit of his own observation and experience ; he has acquired the power of independent thought and work, and gained strength of purpose. By cultivated perception and comparison he has laid the foundation for sound thought, while, by being shown things as they are, and then being taught their names, the possibility is avoided of such confusion of mind and inaccuracy of speech as result when according to the ordinary plan of education words are taught before things. Besides the intellectual value of the system, it is, as I have often heard Sir Philip Magnus remark, the only proper foundation for technical education ; and he tells me that children who come into the schools under his supervision from the Kindergarten get on twice as quickly as those educated on the old plan. Since, then, this system is universally beneficial, all mothers, all who have the care of young children, should study it. The instinct of curiosity in children is usually well developed by the end of the first year, and goes on growing stronger and stronger up till the school-going age, by which time, unfortunately, it has usually been stifled and crushed by the injudicious treatment of parents, who too often consider the natural curiosity, which is the best promoter of intellectual development, as more of a vice than a virtue, and use their best endeavours to suppress it as a nuisance. The parent who is fond of saying, "Oh, don't bother me with questions, run away and play," or, "Little children should be seen and not heard," by discouraging the spirit of inquiry which is rampant in all bright and healthy children, is condemning the youngster to an after-life of mediocrity, of taking on trust such things as are placed before him, and of lack of originality, in so far as originality is shown in the desire for discovery and experimental science.

Of course, children will sometimes ask questions which their parents, for some really good reason, are unable or unwilling to answer ; but in such cases it is far better to say, "I do not know that myself," or "That is a thing which you cannot understand now, but will learn all about when you are older," than to let the child vex and worry himself with the idea that you could answer the question if you wished to do so, but are too disagreeable, or care too little for him, to trouble to gratify his curiosity. I have said that the young infant tests all things within its reach by means of its various senses, and extracts from them what information it can. The older child, as soon as it can toddle, goes poking into corners, sticks its fingers into cracks, opens the lids of boxes, pulls out drawers, and exercises its curiosity in all sorts of different ways. The Froebel system aims at cultivating this phase of infant mind, and stimulating the spirit of inquiry into healthy activity. Accordingly the gifts are presented in closed wooden boxes, and the child is allowed to call upon its imaginative powers in conjectures as to what the box may contain before it is shown the actual contents.

PART I.

SOLIDS.

CHAPTER II

THE FIRST GIFT.

AT about eighteen months, when the child has already acquired a small vocabulary and begins to understand the meaning of words, the legitimate use of the ball, according to the Froebel system, as an educational instrument begins, and we can present the first gift, which consists of a small wooden box containing six little soft balls, all of the same size, one and a half inches in diameter, and covered with wool in the three primary colours—red, yellow, blue—and the three secondary colours—green, orange, and violet. Each ball is of one colour, and the size being adapted to that of the infant hand so that it may easily be grasped, it is a unity in itself, while as the child perceives several other unities of the same kind, though not exactly similar, he begins to get a notion of the law of similarity in diversity. The idea of unity in nature is very early seized. A little eighteen months' old boy, who had been playing with a grey cat, was greatly surprised to see another grey cat, which he evidently took to be the same, enter the room. By the way in which he looked from one to the other, he was evidently puzzling how one thing could be in two places at the same time, and at last he began to cry with vexation. Had the cats been of different colours, however, as the balls are, his infant mind would have been spared a struggle. The importance of the balls in leading the child's ideas from the conception of "one" to that of "many," is supplemented by their use in giving clear impressions of colour. If, as in the common toy ball, there were an admixture of different colours on the same ball, the effect would be confusing, and the simple idea of unity would be impaired.

The ball is spoken of in a Persian saying as "a chosen toy for the children of kings." Having only one surface and no edges or corners, it is the simplest form we possess, and its roundness suggests motion, which is one of the first necessities of a child. Owing to the variety of impressions caused by moving objects, moreover, these are the most attractive to infants. A little baby, before it can move its head, will try to follow with its eyes a candle that is being carried about the room. The six balls of the first gift have each a string attached, and the box in which they are placed contains also two sticks and a cross-piece. The sticks are made to fix as uprights into the cover of the box, and the other piece of wood is fixed on to them, so as to make a sort of frame, to which the balls may be attached by their strings. (Fig. 1.) If all are hung in a line and one ball struck, the wave-like character of motion which is communicated from one ball to another may be illustrated. In this combination the ball, which has before been regarded as a unity, becomes when placed with the others a part of the whole. Apart from the others it may be hung from the cross-piece, and moved to represent a pendulum, the motion being accompanied by a little rhyme, such as—

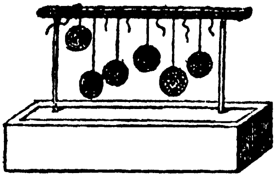


FIG. 1.

"Tick-tack, tick-tack,
Forward now, and now back,"

for there is a good reason for encouraging rhyme and using little nursery songs which serve to train the ear. Rhyme also impresses the memory; but I must here point out how wrong it is to use bad rhymes in the nursery. These only puzzle a child, who can detect the fault at once; they are, moreover, confusing to the memory and a species of untruth. It will usually be found that a child who is saying a verse in which a bad rhyme or faulty rhythm occurs will pause before it, and seem to puzzle as to what comes next. By dint of frequent repetition, however, this sensibility unfortunately becomes dulled, and hence bad rhymsters are tolerated and created, for it is easier to write a bad rhyme than to seek for a good one, how else could we find the late Poet Laureate constantly forcing upon us as rhymes such combinations as "blood" and "good," and so on. As an example of a shocking rhyme I take the following from an otherwise very excellent Kindergarten book:—

> "Angry words they never speak,
> Promises they never break,
> Unkind looks they never show;
> Love sits smiling on each brow."

Very pretty in sentiment, no doubt; but two false rhymes in as many couplets are two too many, and although I could cite instances quite as bad from our great poets, two wrongs don't make one right. Let the lines be ever so simple, but be sure that metre and rhyme are perfect.

The ball can be made to symbolise other objects, and thus gratify the child's imagination. Thus by passing the string over the cross-piece of wood and drawing the ball up and down, it may represent a bucket going in and out of a well, and a little story may be told about it, how Jenny got up early in the morning and lighted the fire, and then went to draw the water for the day. She drew up two or three bucketfuls, but in the last she saw a frog (here show one of those little penny Japanese model frogs) and so on.

The first use of the ball, however, is to teach words and their meanings, and for this purpose one ball with the string attached is taken, and the mother shows the little one what to do with it, and guides its baby fingers to imitate her own actions. Thus the *ball hangs* on the *string straight* from the *thumb* and *forefinger*. (Fig. 2.) I put in italics all the words which are to be taught in connection with each action; and whether the youngster understands them is to be ascertained by questioning, as:—Qu. "What is this?" Ans. "*Thumb.*" Qu. "What does the ball do?" Ans. "It *hangs.*" "Show me how." The action is repeated. Until all the knowledge contained in the above sentence is completely understood, you must not pass on to any other exercise. Next the difference between

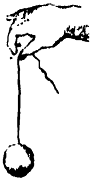


FIG. 2.

"here" and "there" is taught; when the ball approaches its own little body the child says "here," when it moves from it, it says "there." (Fig. 3.) "*Up*" and "*down*," on the *ground* and "*round and round*," are taught similarly, the action and the word coming simultaneously. Then a little rhyme may be made and taught, to embody and impress on the mind the following important ideas, as follows :—

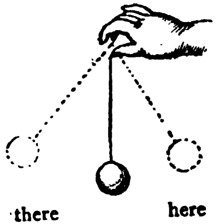


Fig. 3.

"Now *here* and now *there*,
On the *table*, on the *chair*,
Up it *goes* now, you see,
Then it *comes down* to me.
Now it *runs round* and *round*,
Now it *lies* on the *ground*."

The ball is held *over* and *under* an object, such as a book or table, on *this side* and on *that side*. It is *wound up* and *down* by twisting the string round the finger, *raised* and *lowered*. It is made to tap on the table— "Tap, tap, tap, tap, Just like a postman's rap." It is made to spring on the table. Qu. "What does it now do ?" Ans. "*Jump*." It is made to *jump over* a book, to *roll along* the table, to roll *forwards*, *back*, *around*, to *swing* to the *left* and to the *right*. To *swing* or *roll* in *larger* or *smaller circles* by *lengthening* or *shortening* the string as in Figs. 4 and 5, and *round in a circle* it swings. Then it is *drawn up higher* and *higher*, and let *sink lower* and *lower*. It *falls* off the table, and is *picked* up and *placed on it*. It is thrown from one hand to the other and from mother to baby with the words "I *throw* it," "I *catch* it ;" "*You* throw it," "*you* catch it," "I *keep* it," "*you* keep it," and finally it is laid in the box, and baby is taught to arrange the contents of the box neatly and put it in its proper place in his toy cupboard. The first ideas of number are easily obtained from the six balls, for by looking at them together in the box, the little one soon gets to know how many ought to be there, and will miss one immediately if it has been moved.

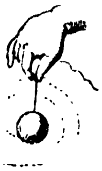


FIG. 4.

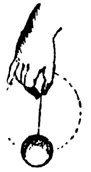


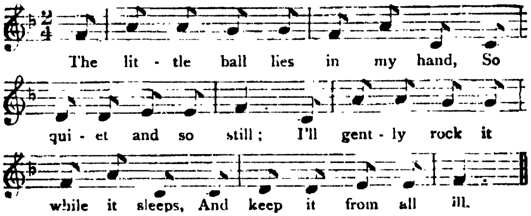
FIG. 5.

while he is not looking. Of course it is impossible in a handbook such as the present, to give more than a few hints as to the most important uses of Froebel's gifts ; others will readily suggest themselves to the intelligent mother, who should also encourage the child to independent play with his "gifts." One word of warning I must utter, however, and that is, never attempt to teach too much at a time ; be sure that one fact is grasped before you pass on to another, and take frequent opportunities of repeating the old lessons. Wolsey's mother, when a friend expressed surprise that she should trouble to repeat the same thing time after time to one of her children, said : "If I were to give up at the nineteenth time all my labour would be lost; but if I go on the twentieth I may not have worked in vain." Patience and perseverance are absolutely necessary to the making of a good teacher.

The balls of the first gift should be given one by one in the order of the colours of the spectrum, red being given first, and orange not added until the colour "red" is known and recognised in various objects, as in a red dress, red book, red flower—so on with all the colours. Orange is so called because it is the colour of the fruit "orange ;" yellow is the colour of gold, of this piece of silk, and of little sister's hair ; green is the colour of the leaves and the grass ; blue is the colour of mother's new dress, of the sky, and of baby's sash ; and so on. When all have been given, let the child arrange the balls in the order of the colours of the rainbow, and teach him to know this order so well that if a ball is displaced or removed while his eyes are shut, he can replace it correctly upon opening them. It is a good plan to have for each ball a little box, just large enough to contain it, and of the same colour. A number of skeins of silk in various colours should also be provided, and the child led to select and classify such as match with or closely resemble the tints of his balls, so as to familiarise him with various shades. A good way of introducing the ball at first is to cover it with a handkerchief and ask the little one to guess what you have in your hand, and tell you what he can about it. He will at once begin to touch it and pinch it, and, if he knows the word, will tell you that it is *soft*. If he does not know the word, now is the time to teach it to him, saying, "You can press your finger into it, so it is soft. Tell me something else that is soft." He will then, after a little puzzling, bring you the cushion as an example of something soft, or point to his own flesh or your dress as answering to that description. He can next be led to discover whether the hidden object is warm or cold, wet or dry, and to distinguish its shape and size, referring these qualities also to other objects. But the ball itself must be given to him before his interest flags, and he should then be allowed to play with it independently for the remainder of the first lesson. Afterwards, when he is playing with it in his own way, you should watch your opportunity to increase his knowledge of the ball's capacities and qualities, and of other objects which it may be made to symbolise.

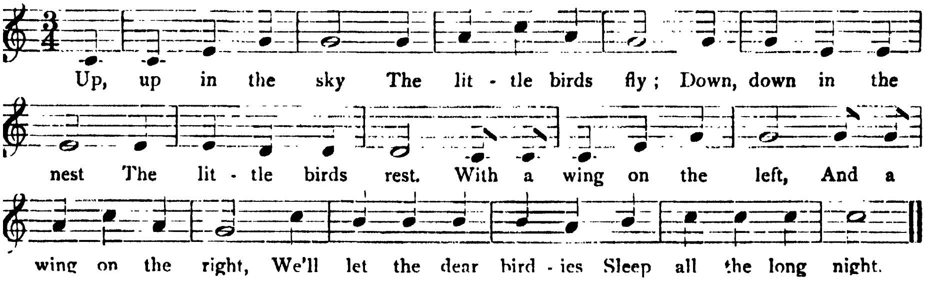
A number of little songs have been published to accompany the use of the ball, and the following is a nice little lullaby which may be called into requisition when the play has become too boisterous, and the little one is getting over-excited. It is sung while the ball is held between the palms of the tiny hands and gently rocked to and fro :—

SONG I


The lit - tle ball lies in my hand, So
qui - et and so still ; I'll gent - ly rock it
while it sleeps, And keep it from all ill.

Another favourite game is to hollow the palm of the left hand, and hold the ball in it, like a bird in the nest, while the right hand is raised and the fingers fluttered like wings. Meanwhile the child, at first with the teacher's assistance, sings :—

SONG II.

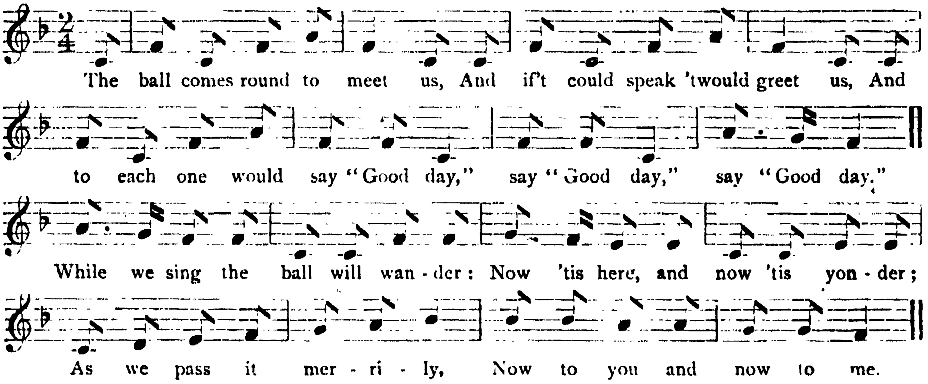

Up, up in the sky The lit - tle birds fly ; Down, down in the
nest The lit - tle birds rest. With a wing on the left, And a
wing on the right, We'll let the dear bird - ies Sleep all the long night.

Then the bird may hop from its nest and perch on the child's arm, which represents the branch of the tree that supports the nest.

In these and all other Kindergarten songs, the teacher must be very careful herself to sing in tune, and to lead her pupil to do so. It is most important to train the child's ear, and if, as is too often done, he is allowed to sing out of tune, or gets accustomed to this fault on the part of his teacher, it would be wiser to put a stop to the singing altogether. Few children are able to sing in tune until after considerable practice. If the teacher hears the error, she should sing the note rightly, so that the child may imitate her. Of course, the same observations apply to cases in which a number of children are taught together, as at Kindergarten schools, but I use the singular here, as I am writing more particularly for the benefit of mothers.

If two or three join in the game, the "Good Day" song is an attractive one. The players stand up in a circle or line, and the ball is passed from hand to hand, left as well as right hand being used; the ball being received in the right hand, passed into the left, and from that into the right hand of the next player.

SONG III.


The ball comes round to meet us, And if't could speak 'twould greet us, And
to each one would say "Good day," say "Good day," say "Good day."
While we sing the ball will wan - der: Now 'tis here, and now 'tis yon - der;
As we pass it mer - ri - ly, Now to you and now to me.

I have taken the liberty of altering the last two lines of this song, which in the original are, "But in one thing we agree, I love ball and ball loves me," as I consider them quite too nonsensical to put into the mouth of any rational child. Most of these Kindergarten songs, indeed, require some alteration before they are fit for use, and it is a pity the writers should not take more pains in regulating their rhythm, rhyme, and sense.

Each of the gifts devised by Froebel as a means of developing the infant's faculties has various occupations connected with it, the object of which is to train to habits of industry and increase manual skill. At first the uncertain baby fingers are not capable of accurate work of any kind, and the possible occupations are of the simplest. The first, which can be practised by children from two and a half to three years old, is the stringing together of wooden beads of the colours of the balls, which may be done in various patterns and directions, and carries on the easy lessons in arithmetic begun by the six balls. Before beginning work, attention should be drawn to the materials and colours of the beads, and their resemblances and differences from the balls—they being *hard*, the balls *soft*, they feeling *cool* and *smooth*, the balls *warm* and *rough*, and so on.

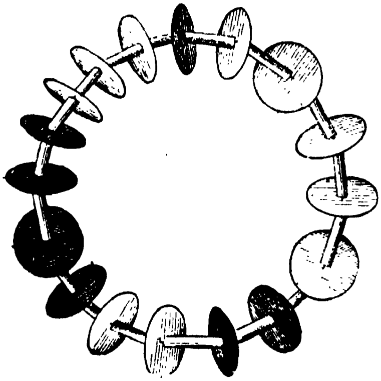


FIG. 6.

Children must always be watched when playing with such small objects, and the first attempt at putting the beads into the mouth or up the nose must be kindly but firmly stopped ; diverting the attention is by far the best plan, but all stories of children who have swallowed beads and died, &c., do far more harm than good, and often lead to the very habit they were meant to check, so great is the perversity of human nature, even in the earliest years. It is rare indeed that we are able to deter from wrong-doing by dwelling on the wrong-doing. By stringing the beads on cotton, necklaces and bracelets may be made ; by stringing them on wire, all sorts of forms and patterns can be constructed. The beads should not be smaller than a quarter of an inch in diameter, and the holes should be large, so as not to try the baby eyes.

The next occupation consists of stringing small circular papers, also of the ball colours, in alternation with straws an inch long, as shown in Fig. 6.

Chains or rings may be made of any length the little one likes. In introducing this new occupation, one paper of the colour the child knows best should be given first. Allow him to look at it for a time, and then ask him what he thinks of it. If he says it is like the ball, point out that it is like it in colour and in its circular aspect, but unlike it in being flat instead of round. He may look at it as a picture of a ball, and if you buy these papers with a light coating of gum on the uncoloured side, and give him a camel's-hair brush and a saucer with a little water in it, he can gum them on pieces of white paper, and thus find another pleasant occupation; or he may be allowed to colour circles drawn on a paper or card, by using crayon pencils. When he first has the paper, let him examine it with his fingers, and show him how to handle it without crushing it. Let him pass his finger lightly over the edge and surfaces, and learn to distinguish the smooth side from the rough, with his eyes closed. After he has thus become familiar with the paper, the straw is produced, and attention drawn to its colour, which, though not quite the same as either of the balls, closely resembles the yellow one; to its hollowness, like a little tunnel, and to its little circular ends. The breakable qualities of both objects must be dilated upon before both are put together by means of a needle and thread or fine wire (Fig. 7), and the child must be cautioned against tearing them or running his tool into his little fingers. The difficulty of this occupation is to get the instrument exactly through the centre of the straw and paper, and the ideas of regularity and distance are thus developed. At first the needle is sure to go to one side or other of the paper, and never to "hit the bull's-eye." But practice will bring this right. The occupation should always be stopped before the child has had time to tire of it. If the little fingers are pricked, do not condole too warmly, or you are likely to have a flood of tears, but tell the youngster to bear it like a man, and point out to him how to "do better next time." Bobbin and reel-threading is also a favourite occupation. The delight is much increased if the reels and bobbins are painted over with Aspinall's enamel.

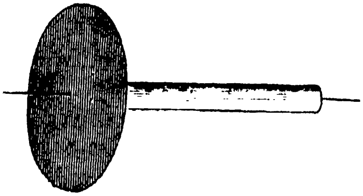


FIG. 7.

ADDITIONAL NOTES FOR TEACHERS.

The following remarks are intended as a guide to the young Kindergarten teacher in arranging a course of lessons on Gift I.—

First, what can be taught by Gift I.

Next, how the teaching can be given.

I. COLOUR TEACHING.

Three primary colours taught—	*Three secondary colours*—
Red, yellow, blue.	Orange, purple, green.

Method to use—

a. Take each *colour* by itself, and match wool, silk, papers, flowers, paints, and chalks with it. At first treat all shades of a colour, such as pinks, scarlets, and reds, as *red*, and do not trouble the child with any other colour names. Little songs may be taught to impress the teaching of the colour-lesson, and to give the child the needful exercises of voice and limb.

Example—

"Very pretty is the ball,
Red and round, and soft and small."

b. Then teach shades of a colour and the blending of colours.

II. TAKE A SERIES OF LESSONS ON FORM.

a. Finding other things of the same form as the ball, *e.g.*, fruits, apples, oranges, stones, and pebbles; child's own fist, head.

b. Teach what the *spherical* form is—the absence of edges, corners, and plane surfaces. Let this teaching be the outcome of the games and chats; and see that the teaching helps the child's language powers. Again introduce songs and plays to illustrate the teaching on form.

III. TAKE A SERIES OF LESSONS ON NUMBER.

In play impress such facts as—

a. Difference between one and many or few and many.

b. Difference between one and two, and so proceed.

Get the child to pick up any number of balls told.

Give very simple adding lessons: $1+1=2$, $2+1=3$, &c.; and then take subtraction in the same way: $2-1=1$.

Let this teaching be given in story form, and the child be made to say in a sentence or story what it has done : *e.g.*—

I had two balls on the table, one fell down, and so now I have only one ball on the table ; or, Mother gave me *one* red ball and father *one* blue ball, so now I have *two* balls, &c.

c. Use the balls of this gift for definite *ball gymnastics,* preparatory to Miss Chreiman's ball exercises.

The ball-games given in Miss Heerwart's "Music for the Kindergarten" are very good. It is important to lay down certain rules to be observed in playing and selecting these games, such as—

(1) See that all the limbs are equally exercised– hands, arms, wrists, legs, back, &c.

(2) See that the action is promptly done.

(3) See the children exercise *self-control* in not immediately running after a ball when it is dropped.

The habits formed by these games and the training given, which is mental, moral, and physical, is the important matter. In a well arranged Kindergarten time-table there should be daily play, with the ball for the youngest children, and games two or three times each week for older children. There should be a definite point in each lesson, and continuity in the lessons and games given, if they are to be of any real educational value.

CHAPTER III

THE SECOND GIFT.

THE second gift consists of a small wooden box like the first, but containing three wooden forms, a ball or sphere, a cylinder or roller, and a cube. (Fig. 8.) Sometimes two cubes are given.

THE WOODEN BALL.

As soon as the teacher is sure that the child has gained clear impressions of the qualities of the soft ball, the hard ball is presented, and the little one must be led to observe the points of similarity and difference between the two. The first point of difference is, of course, the hardness of the new plaything, which hurts if it strikes the hand unexpectedly, which makes a noise if it falls on the floor, and which rumbles as it rolls, and rolls much better than the soft ball. It imitates far better the rat-a-tat of a postman, or the sound of a hammer, and yet it can be used for all the games for which the other was available. Froebel calls such objects as the two balls "similar contrasts," and, his rule being to "add the unknown to the known," he uses the new set of impressions produced by the hard ball as an introduction to those which are to result from the other objects that form part of this gift. The differences in colour are at once apparent, while the resemblances of the two balls are in form and size only. The chief points of contrast are : —

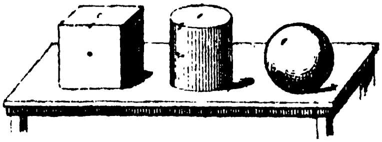


FIG. 8.

The woollen ball is	*The wooden ball is*
Soft.	Hard.
Warm.	Cold.
Rough.	Smooth.
Light.	Heavy.
Noiseless.	Noisy.

And the child should be led to discover and point out those differences. The heavy ball is more useful than the light one in developing the muscles of the little arms and hands, and in training the eye to aim correctly. The box may be stood on end and the ball rolled or thrown to knock it over. Then box, cube, and cylinder may be stood one upon the other, with the woollen ball on the top (Fig. 9), and all baby's skill will be required to knock off the ball without disturbing the other objects. At this point other lessons may be taught by the introduction of other balls of various weights and sizes, by which to cultivate the sense of weight. Thus, of two balls of the same size and different weights, the pupil should be made to say which is the heavier, and the same in the case of two balls in which the larger is the lighter, so that ideas of weight and size may be dissociated from one another.

Froebel also suggested that three spheres should be given, one white, one black, and one half white and half black, for lessons on light and shade.

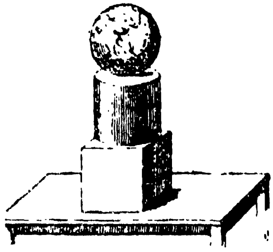


FIG. 9.

To the sphere, as to the other objects in the second gift, a little eyelet is attached, to which a string can be fastened, so that it may be swung or fixed up to the frame, as are the balls in the first gift (see p. 8, Fig. 1). By way of exercises, the child may first stand holding the sphere suspended by the string like a pendulum, and mark the time of some little song by swinging it backwards and forwards: "one" (firmly), "two" (softly), the right hand being used first, and then the left. If there are other children, they should stand round in a ring, and also sing, marking the time in the same way. Next, the child may hold two balls, marking "one" with the right hand, and "two" with the left, and the time may be marked in various ways, as by the right and left hands alternately dropping one sphere and marking either the fourth or the eighth; or the left may mark the eighth and the right the fourth. Again, these movements may be alternated, or either hand may be employed alone.

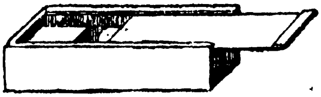
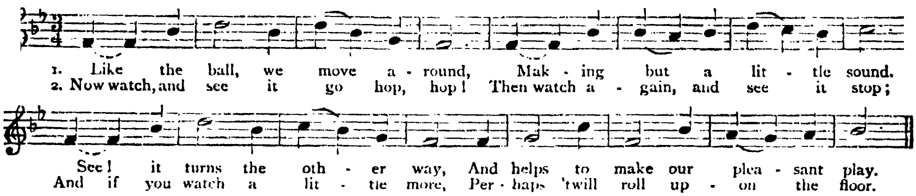


FIG. 10.

It is important that the child should early learn which is its right and which its left side. Well do I remember the agonies of shame and mortification which I used to suffer as a little tot at dancing-school when the mistress used to say, "Right foot forward" or "Left foot forward," and I almost invariably advanced the wrong foot. Once she asked me, before the whole class, "Is it possible, Ada, that you don't know which is your right side and which is your left?" And, with groanings of spirit, I had to acknowledge that my ideas on this subject were very far from clear.

When there are several children, a pretty exercise is to let one child stand in the middle of a circle formed by the others, who move round till the word "Stop," while the one in the centre plays with the ball in various ways, letting it hop, swing, roll, or pass from one to another; all the children meanwhile sing.


1. Like the ball, we move a - round, Mak - ing but a lit - tle sound.
2. Now watch, and see it go hop, hop! Then watch a - gain, and see it stop;
See! it turns the oth - er way, And helps to make our plea - sant play.
And if you watch a lit - tle more, Per - haps 'twill roll up - on the floor.

When the child, by means of such exercises and games, has become thoroughly familiar with the ball and sphere, and before he has begun to tire of them, it is time to introduce him to

THE CUBE,

which Froebel says should be given next, and before the cylinder, because it is more strongly contrasted to the ball. Yet it may be pointed out that the cube, if whirled rapidly round, assumes the appearance of a sphere. It represents rest and variety in contrast to the motion and unity of the ball. The points of difference should first be observed and impressed upon the little pupil. Thus the

Ball	*Cube*
Has one surface.	Six surfaces.
„ no edge.	Twelve edges.
„ no corners.	Eight corners.
Will roll.	Will not roll.
Will not slide.	Will slide.

Owing to the numbers of its faces, edges, and corners, the cube affords a great educational advance; and one of the best ways of impressing the numbers on the child's memory is to give it, say, thirty marbles, and let it pick out from these successively the numbers which correspond to those of the edges, faces, and corners of his new plaything.

The points of similarity between the cube and the sphere which our young child should be made to indicate are that both are of the same colour cold, smooth, hard, and will swing and turn.

To teach the nature of the cube demands far more skill on the part of the teacher than was required in the case of the ball. For example, the word "surface" may be taught by covering the upper surface of a book with your hands and then telling him to cover the surface of the cube; but the idea of "surface" is not easy to convey otherwise than as an "outer layer," or "side." To teach the meaning of the sides, pretend that the block is a square brick house, such as he has seen in his walks abroad, mentioning some special house which has attracted his notice, and tell the story of a soldier riding round the house, who goes to the front door first, then round to the back door, past the garden door on the right-hand side, &c.; illustrate by a toy soldier, and end up by soldiers mounting guard over the house. You should teach by opposites, and thus teach the child first to put his hand on the "top" of the house, and then to find its bottom. After this, he will not find it difficult to discover its back and front and its right and left sides, while he is led to find out the idea of the equality of its sides and edges by observing that, however it is turned, the part which looks towards him appears the same. The lessons must be kept playful to suit the little pupil's age, and the more they appeal to his imagination the better pleased he will be. The following story may illustrate this:- An old man (his right forefinger) was walking along a country road (on the table) one day, carrying his box (the cube), in which he had all that belonged to him. After walking a long time, he felt very tired, so he put down his box in a quiet place, and sat upon it to rest. He soon fell asleep, but before long he was waked up by a sting on his nose. This made him feel very angry, and he was determined to find the wasp which had stung him, and to kill it. He looked under his box, and saw it just creeping out at the back. He ran round to the back, but it had already flown over and got to the front. He followed it first to the right side and then to the left, and just as he thought he had caught it, it gave a loud buzz and flew away. At each following lesson the child should be made to point out in their natural order the top, bottom, front, back, left side, and right side of the cube.

Before touching on the difficult lessons of number, the child may be amused by little rhymes illustrating the nature of the cube. Thus:—

"Upon the table the live-long day
My cube will rest if I let it stay."

Or, while trying to balance it on one edge, sing:—

"It tumbles here and tumbles there ;
To stand on one edge it cannot bear."

Or, again :—

"Quite well upon one point it stands,
If steadied by my little hands."

A further advance may be made in a similar way towards the knowledge of the numbers connected with the cube. Thus, the teacher covers it with her hand, so as to show only one corner, and sings :—

"Only one corner now you see !
Wherever can the others be ?"

Then, showing two corners, she sings :—

"Two corners now are well in view,
The others I shall hide from you."

In order first to discover the corners and edges, the child's forefinger should be sent on an exploring expedition, to see if any part of the block feels different from the smooth surface ; he soon finds a corner or edge, and his fingers should be made to travel the whole length of the edge, since length is one of the chief features of all edges. Then the cube may be held so that only one side can be seen, and the child may count how many corners and edges it can see. Then it can be turned so that two sides are visible, and the same operation of counting gone through, after which it should be so placed that three sides can be seen at once, and the counting again repeated. Thus the child learns that it can see either

One side, four corners, and four edges,
Two sides, six corners, and seven edges, or
Three sides, seven corners, and nine edges.

It has then to appreciate that it cannot see all four sides at once, but it can imagine all four together, from its previous experiences of touch, as having six sides, eight corners, and twelve edges. This knowledge is by no means easy to convey or to be grasped, and a great number of lessons will be necessary before it is properly appreciated. It is only practically that the child can learn such facts in geometry as that each face of the cube is bounded by four straight lines, which make four right angles ; that the plane angles meet in points, forming eight corners or solid angles, the faces meeting each other to form twelve edges or solid lines. The practical knowledge of solid geometry is of the greatest service as a firm basis for future education, and no geometrical knowledge acquired from books in later life can be of much real value without a basis of this kind to rest upon. The parrot lessons of the ordinary aspirant for academic honours may be sufficient for the purposes of examination, but in the majority of cases I feel convinced that they convey absolutely no ideas at all to the mind of the student.

THE CYLINDER.

Having been led to observe the similarities and differences between the ball and the cube, as explained in my last article, the child will easily find out in what points the cylinder resembles and differs from his two other toys, and these must be indicated as follows :—

Ball.	*Cylinder.*	*Cube.*
One surface.	Three surfaces.	Six surfaces.
No edge.	Two edges	Twelve edges.
No corner.	No corners.	Eight corners.
Hard.	Hard.	Hard.
Noisy.	Noisy.	Noisy.
Heavy.	Heavy.	Heavy.
Will roll from all points.	Will roll from one surface.	Will not roll.
Will not slide.	Will slide.	Will slide.

The cylinder, like the sphere, has one curved surface, but it also has two flat ones. Attention should also be drawn to the comparative weights, size, &c. At the very first sight it is, of course, apparent that the cylinder combines the mobility or rolling power of the ball, with the immobility and sliding power of the cube, and it combines the educational value of both. It can also be used to imitate a garden roller and a rolling-pin. Thus the teacher can sing :—

> "With a stick through my centre I roll round and round,
> And look like a roller that rolls on the ground."

and again :—

"I roll the paste to make a tart,
So dear to every childish heart."

If a string is fastened to one of the flat ends of the cylinder, and it is twirled round, it still appears to retain its shape, but if a string is fastened to the middle of its round surface (Fig. 11.), or a stick passed through it, and it is twisted rapidly round, it looks like a ball.

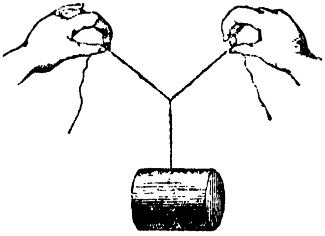


FIG. 11.

Then sing :—

"With a stick (or string) through my centre I rapidly twirl,
My sides and my edges are lost in the whirl;
You see them no more, although there they remain,
And when I stand still you will see them again."

Next, the string is fastened to the third staple on the edge, and the cylinder again twirled round, when it is found to look like a double cone. (Fig. 12). Other changes may also be made by making the cylinder pass through fresh evolutions, and these changes of appearance are so unexpected that to the child they seem most wonderful, exciting the greatest interest and curiosity. Now is the time to impress upon the pupil that each of the cylinder's two edges forms a circle, and if the middle were cut out would make a ring. If the cylinder is stood on a sheet of paper on one of its flat ends, and a pencil is passed round it, a ring or circle is left on the paper, and the same happens if a penny is laid on the paper, so that a penny may be imagined as a slice cut off a cylinder. The point inside the circle, which is at the same distance from every part of the edge, is called the *centre*. If I stood in the middle of a ring of children all holding hands, I should be in the centre of the circle :—

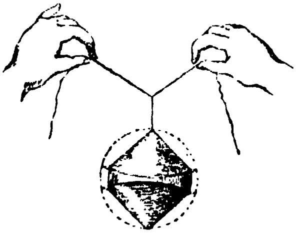


FIG. 12.

"Round we go, round we go, all holding hands,
While in the centre our dear teacher stands."

It must be pointed out that when the child looks at one end of the cylinder he can only see one smooth surface and one edge, and he has to imagine the curved surface, the other flat surface, and the other edge. In looking at the curved surface, also, he can never see more than half of it at the same time, and can only imagine the rest ; and, whatever way he turns it, he can never see more than one flat surface and half the curved surface, although with both hands he can feel the whole of the cylinder at the same time. Then let him mention all the round things, all the cylinders, and all the cubes he has ever known or heard of, as : the world, cricket-ball, cannon-ball, garden-roller, marbles, pastry-roller, machine-cylinder, &c. After becoming familiar with the three forms of the second gift, the child rapidly advances in the power of making comparisons and of classifying objects, which is so important an agent in education. He compares the edges and corners of books, boxes, bricks, and so on, with those of the cube, and the round edges of the dinner-plates and other such familiar objects with those of the cylinder, and so on. Such observations should be encouraged to the utmost, and exercises may be planned on the same line.

OCCUPATIONS CONNECTED WITH THE SECOND GIFT.

A considerable number of small objects, such as rings, stones, seeds, pill-boxes, pencils, sticks, buttons, cotton-reels, and such miscellaneous articles, may be placed in confusion before the child, who is to be told to arrange them in three piles or rows, according to whether they most resemble the sphere, cube, or cylinder. After they have been sorted, the little one should be questioned as to his reasons for placing this or that object in the pile in which he has put it. Thus, if he places a melon-seed in the cylinder pile he may say he has done so because it looks like the cylinder when it is twirled round, so as to make a double cone. The easiest occupation given in connection with this gift is the stringing together of small coloured beads in the forms of sphere, cube, and cylinder. (Fig. 13.) These combine variety in colour and form, and can be arranged in so many different ways that they can be made to figure in many lessons without the little pupils growing tired of them. The stringing together of papers and straws described in Chapter I.,

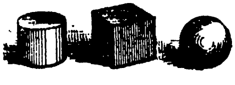


FIG. 13.
(Wooden beads, exact size.)

page 14, can also be continued here, the straws being made to represent the cylinder, and the papers the cylinder's flat surface. Squares of coloured paper in connection with the cube's surfaces may be added, and variety be made in these chains. The use of these things should not begin until the pupil is quite familiar with the objects of the gift itself, and can trace the connection between them and the new occupations.

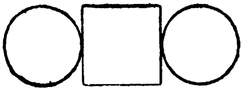


Fig. 14.

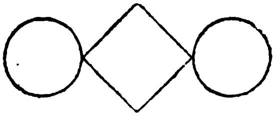


Fig. 15.

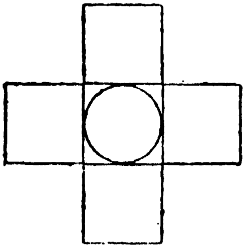


Fig. 16.

In the pasting or gumming of figures, described above, on page 15, greater variety may now be enjoyed, the materials being squares and discs at first of the same size as the surfaces of the cube and cylinder, but afterwards, as the hands grow accustomed to their work, smaller than these. Quite pretty patterns may now be made with pleasant combinations of colours, as in mosaics. (Fig. 14.) At first the papers are merely laid or pasted in the relative positions of the round to the square, as in Figs. 14 and 15, and the outlines may be drawn on paper, which helps to steady the baby-hands, and is a source of great amusement. When the child has become used to laying the round papers quite neatly, so that they touch either the corners or the sides of the square, he can pass on to make little figures, and may be allowed to devise fresh ones if he can. He can place five squares so as to form a Maltese cross, and vary it by placing a round one in the centre of the middle square, as in Fig. 16, and, with either a square or a round one as a centre, he can make quite a number of different figures. The law of opposites, which it is so important to impress on him early, and which is of special service in the study of design, here comes to his help. He should be made to understand that all opposite points of his figure should be the same, so that the appearance may always be symmetrical, as in Figs. 16, 17, 18, and 19. As perfect work as possible must be required from the pupil, and if he is inexact or careless—placing, for instance, a circle where there ought to be a square, or *vice versâ*—he must be led to see that all is not right. Neatness and accuracy are of the greatest importance, and when a fairly good result is obtained praise should be judiciously bestowed.

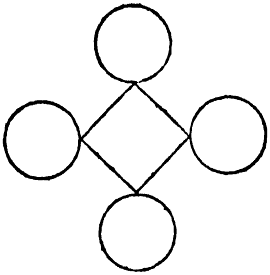


FIG. 17.

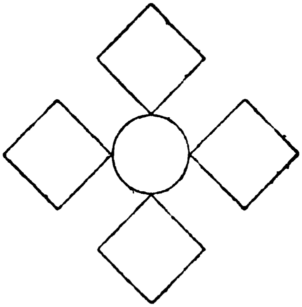


FIG. 19.

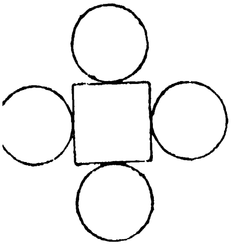


FIG. 18.

The rapidity of progress in the study of these gifts, and the occupations connected with them, must depend very much on the aptitude of the child and his physical condition. The least sign of fatigue or excitement should be taken as an intimation that the lesson has lasted long enough, and the lessons should always be varied by songs, easy gymnastics, and games.

When these occupations are begun is the time to seat the little pupil at the table which Froebel specially devised for his use, and which is of the utmost value as assisting him in the art of design and of numbers.

The surface of the table is covered with lines which form inch squares, and these checks are used with most materials to secure accuracy of design. They are also extremely useful in giving lessons as to place and direction. Such lessons may be given with button moulds and beads, and may be finished by the child threading the moulds and beads alternately on a string, and putting them away for the next lesson. The little one is directed to move his finger from the edge of the table in front of him in

KINDERGARTEN TABLE.

a straight line, say, to the eighth square, or, if he cannot count as high as eight, he is to move his finger on until you cry, "Halt." A bead or button is then placed on the desired square, and he now has a centre to work from. You then tell him to place one in the square to the "right," another in that to the "left," one on "top," and one at the "bottom," or "before," or "behind," as you may wish. The result will be a pretty figure which will be quite a surprise to him. This may be done with the discs and squares to form Figs. 16 to 19, as shown above, and many others. Then he may be directed to move a button or piece of paper "two," "three," or "four" squares off, as the case may be, and thus he is exercised in counting, and will be delighted with the new figures formed. Thus, for example, from the centre square cover two squares to the left, and one down below the second square. Then return to the centre, and cover "one," "two," "three" squares above it. Then cover one square below it, and you have the rough outline of a high-backed chair. From the centre cover three squares on each side, two squares down from each end square, and finally two squares up from each end square, and you have the rough semblance of a sofa. A house with windows and door may be produced in a similar way, and an immense variety of rough outlines of other objects, the production of which causes the utmost delight to the pupil.

ADDITIONAL NOTES FOR TEACHERS.

LESSONS—

I. *Sphere, cylinder,* and *cube* are the three fundamental forms; the child must be led to find these forms in natural objects and in manufactured articles.

II. The *law of contrast* is taught by this gift, and its *reconciliation;* this is best done by little talks, for the child to find out the points in which these three forms are alike or in which they differ.

III. These three forms should be the starting-points for all clay *modelling lessons;* each form should first be modelled and then objects made from it: *e.g.*, model a ball and then model cherries, plums, apples, eggs, &c.

This subject will be treated more fully in the chapter on clay modelling. (See p. 129.)

CHAPTER IV.

THE THIRD GIFT.

THE third gift is a wooden box, containing a wooden cube, divided once in every direction, so that it forms eight smaller cubes. This is what Froebel called pre-eminently "the child's toy," for it is the first approach to that desire of the little heart, "a box of bricks." The child is first taught to draw the lid out a little way, then to invert the box on the table, draw away the lid and finally to lift up the box, leaving the cube complete, to his surprise and joy, for he is not before told what he is to expect to see. He is then allowed for a time to do what he pleases with his new plaything, so as to observe its capabilities, and he will find that he can divide it into two, four, or eight equal parts, which he can count, lay side by side, and arrange in a great variety of ways. A bright child will soon begin to examine the parts carefully, and to discover new points for himself; to see that each part has the same form, and number of faces, edges, and corners as the whole cube, with which he had already become familiar in the second gift. A backward child should be allowed carefully to investigate for himself the cube's possibilities, and, if necessary, be led to perceive the important points. He will notice the lines or cuts, but may require to have his attention drawn to the fact that there are, in reality, only three dividing lines, or slices, as may be shown him by cutting a loaf of bread in the same directions. The first exercise is to remove the parts of the cube one by one, to show how it is made up; and the second to re-form it.

Exercises with the cubes may be given on form, figures, number, and place, as well as in the use of words, the observation of objects in real life, and the art of design. Such exercises may be classified into those on: 1. *Objects,* calculated to lead the child to observe what is around him. 2. *Symmetrical forms,* to cultivate the sense of beauty and order. 3. *Geometrical forms* and number, to develop the reasoning faculty.

OBJECTS.

Since the real forms are those which the child will find most interesting, and therefore easiest, it is well to begin with them. Thus, remove the upper half of the cube (Fig. 20), and ask: "What does this look like?" Answer: "A board, floor, or wood pavement." It is not well for the teacher to make all the forms herself, though she should occasionally make one by way of example, and to stimulate a spirit of emulation. She should instruct the child what to do in clear terms, describing each step verbally, and starting from the cube form.

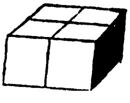


FIG. 20.

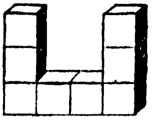


FIG. 21.

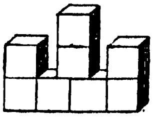


FIG. 22.

Figs. 21 and 22 are castles, about which the child can be told of Dover

Castle, the Tower, and how, in the Middle Ages, people lived in castles. Fig. 23 is the gateway of the castle, and gives occasion for a description of a portcullis such as may be seen at the Tower; and Fig. 24 is the staircase ascending to the Tower. The teacher may work on these lines for many succeeding lessons, varying the exercises with stories, songs, drawings, and clay-modelling. We now come to the

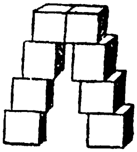


FIG. 23.

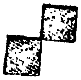


FIG. 25.

FIG. 26.

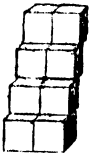


FIG. 24.

SYMMETRICAL FORMS,

or forms of beauty, the variety of which is immense. In making these, it will be found useful to work on the chequered table described and sketched above on page 28. I give a number of forms by way of suggestion.

Two cubes are first given, so as to begin with the elements of design. These can be placed side by side, corner to corner (Fig. 25), corner to side, and half-side to half-side (Fig. 26); all the later figures are but modifications of these. They are divided into such as have the centre solid and such as have the centre open. If chequered paper be used, the more varied designs may be marked with pencil on the paper, in a line or series, so as to form a consecutive design. They may be marked out with coloured crayons, or, if squares of paper of various colours are used, they can be gummed on to a sheet of cardboard to make frames and other ornamental designs such as may suggest themselves to the mind of the child. The small cubes are inch cubes, consequently half one side is half-an-inch; and this is very useful for the child to know. The instructions for making the designs can be given as before; thus, for example—

1. To form Fig. 27, make a ring, allowing two corners of each cube to such two cubes.

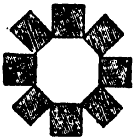


FIG. 27.

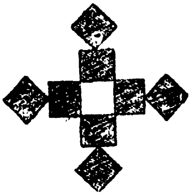


FIG. 28.

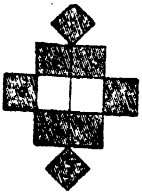


FIG. 29.

2. To form Fig. 28, take four cubes, and place them so that two corners of each touch two cubes. Then take the other four cubes and turn them so that one corner of each touches the centre of the outer surface of one of the first four cubes. (Fig. 29.)

3. From the whole cube remove the four upper cubes and turn them so that one side of each shall touch half of one side of two others. (Fig. 30.)

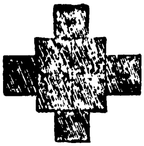


FIG. 30.

4. Starting from Fig. 30, (*a*) move the right-hand cube up half-an-inch; (*b*) move the left-hand cube down half-an-inch; (*c*) move the top cube half-an-inch to the left; (*d*) move the bottom cube half-an-inch to the right, and you have a figure which, by further shifting each outer cube half-an-inch, is changed into Fig. 31.

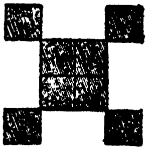


FIG. 31.

5. Place four cubes so that a cube's space shall intervene between each two of them. Place the four other cubes outside them, so that each shall touch two at two corners, to form Fig. 32, and so on.

Varied forms may be made surrounding a straight cross (Fig. 32), and a sloping cross (Fig. 33). Great care is required in making the forms, and accuracy and neatness should be demanded from the pupil. Remember also that it is better for him to make a few well, than to attempt to make a great many, and do them badly. The terms used in making these designs, which the pupil must understand, are right, left, front, back, upper, lower, under, over, inside, outside. The law of opposites is the great guide to the formation of a symmetrical figure. In making these figures, as the instructions are sometimes complicated, it is necessary to advance very slowly, and to be sure the children understand. A good way of testing this is now and then to require the pupil, or one of them if there are more than one, to direct what the next step shall be. Thus, suppose the cube to the extreme right of Fig. 30 has been placed; if the child understands the law of opposites, he will not want to be told to place another in the same position on the left. The capacity for designing is greatly developed, and the power of appreciating design in carpets, laces, and architecture increased by the intelligent use of this gift.

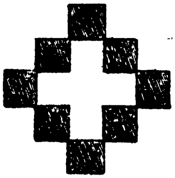


FIG. 32.

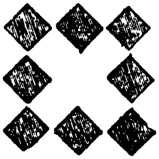


FIG. 33.

Such an immense variety of "real forms" may be constructed by the use of the third gift that a great number of lessons may be spent in the making of such forms, and the teacher should tax her ingenuity to make them, and invent new and instructive stories applicable to each. The amount of information that a clever teacher may impart in this way is really enormous, and the memory of the pupils should be exercised by causing them to reconstruct the same figures on future occasions, and repeat as far as possible what they were told in connection with each. In such a repetition the teacher should always hear the child to the end in silence, and then correct any errors that may have been made and supply any lapses of memory. During the lessons on the "symmetrical forms," "real forms" of a symmetrical nature may be introduced for the sake of the brightness caused by introducing a song or tale; but it must not be forgotten that the chief object of these lessons is to cultivate the artistic taste of the little one. When a good pattern has been made, some account may be given of the processes of iron-founding to make ornamental work, of carpet-weaving, and of lace-making.

In building with this gift, as also in making the symmetrical patterns, the child should never be allowed to *destroy* a form to make a new one, but should be led to see how one form grows out of another by simple changes, and then the desire to *destroy*, which is strong in little children, is turned into a desire to *construct*, to *make*. Then, this habit of methodical progressive play is a most valuable one to acquire, and prepares the way for methodical progressive work later. Again, each building or pattern should contain all the eight parts of the cube; using a definite number always, and seeing how many different forms can be produced with the same number, is useful training in resource and the economical and right use of material.

Another rule to remember in using this, as well as the two succeeding gifts, is always to see that the child *takes* the cube as a whole from the box in the way indicated at the opening of this article, and *returns* it as a whole. The cube should first be built up, then placed on the lid, the box inverted over the cube, the whole turned over, and the lid replaced. This orderly taking out and replacing of the gift trains the sense and develops a love of order and completeness.

GEOMETRICAL AND MATHEMATICAL FORMS.

The child was prepared for these by his first examination of the third gift, which led him to observe the equal surfaces, edges, and corners or angles, and the lines by which it is divided into the smaller cubes ; but no counting was then attempted. This should now be begun, and continued or repeated at every lesson. The cube is first presented as "one whole," and its edges, corners, and surfaces counted as with the cube in the second gift (see Chap. III. pp. 20 and 23). The teacher then suddenly divides it, by taking away the four right-hand from the four left-hand cubes, and says, "two half cubes," thus teaching the fact that "two halves are equal to one whole," and that "the whole is greater than its part." This is to be imitated by the children until they can do it easily, they all the time repeating the words till they know them.

Then the divisions are made : Half to the right, half to the left, half in front, half behind ; half up, half down. The division being made in each case in length, breadth, and height, and illustrating the three dimensions, the next lesson is "two halves equal four quarters" (Fig. 34). After the children have appreciated this, and reconstructed the original cube, they should again divide it into quarters, which can then be divided into eighths (Fig. 35). The children may then count the eight separate cubes, and reconstruct the quarters, halves, and finally the whole, which should then be put into its box till next lesson. The lesson may be illustrated by dividing other things, such as a cake or an apple. *Q.* "If I cut this into two equal parts, how much will each be !" *A.* "Half." *Q.* "If I divide

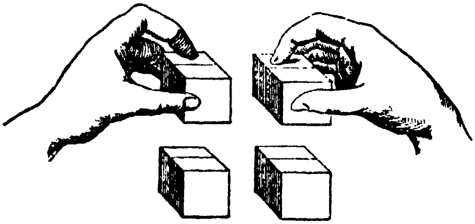


FIG. 34.

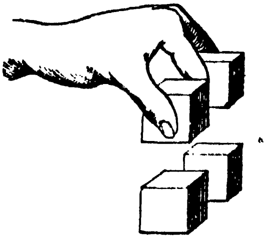


FIG. 35.

each again, how many parts will there be?" *A.* "Four quarters." *Q.* "Again?" *A.* "Eight-eighths, which equal one whole." *Q.* "If I give one to you, how many should I have myself?" *A.* "Seven." *Q.* "If two to you?" *A.* "Six." *Q.* "If three to you?" *A.* "Five." *Q.* "If half to you?" *A.* "We should each have four." This use of the third gift familiarises the child with the elements of fractions, and also inducts him into the

STUDY OF MEASUREMENTS.

The third gift is a cube of two inches, so that each smaller cube is of one inch, and if all are laid in a row the line is eight inches long. Thus the castle is three inches high, the staircase four inches high, the base of the monument is two inches square; the height of the monument is six inches, and so on, measuring each figure as it is made. A great variety of measurements in length, breadth, and thickness, may thus be given, and the child may be presented with a foot-rule, so as to measure other things in inches, and compare them with those with which he is familiar. I believe that a very great deal may thus be done in cultivating what I will call *a sense of measurement:* this sense, owing to want of cultivation, is very deficient in the vast majority of people, who cannot guess anywhere near the real length or breadth of the commonest piece of furniture. There is an old trick which proves this clearly. A chimney-pot hat is shown to a person, who is asked to place his finger at the point on the wall to which he thinks the top of the hat will reach if it is placed on the ground. He is generally three, and sometimes four, inches out in his calculation. The absence of an "eye for measurement" is a serious drawback in everyday life, and the sooner this is made the subject of education the better.

CHAPTER V.

THE FOURTH GIFT.

ALTHOUGH the fourth gift to a superficial observer apparently differs but little from the third, it marks a distinct advance in the logical progress from the known to the unknown. The third gift is a cube divided once in every direction to form eight smaller cubes; the fourth gift is a cube of precisely the same size (two inches), divided once through its height and three times through its thickness, so as to form eight oblong blocks, or, as children prefer to call them, bricks, each of which is two inches in length, one in width, and half-an-inch in thickness (Fig. 36). Hence it is similar to the third gift in the numbers of its parts, in its size, form, colour, and material; but it differs from it in the special form of each of its parts. The blocks of Gift III. have six surfaces of equal size; those of the fourth gift have surfaces of different sizes, none of which is square, two of them being long and wide, two long and narrow, and two short and narrow. In giving instructions, it is necessary to distinguish between the broad side, the narrow side, and the end. Ideas of length, breadth, and height have already been acquired by building with the third gift, and now it becomes possible to demonstrate length, breadth, and height on the same brick.

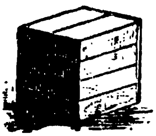


FIG. 36.

It is not a bad plan to introduce this cube wrapped closely in a soft handkerchief, which arouses curiosity and interest. The little fingers may be allowed to wander over the covered surfaces, and the cracks will soon be discovered. The child will feel that the new does not entirely resemble the old plaything, and will be very anxious to see it. When it is given to him, he may be allowed to play with it by himself for a time, and to play with it in combination with the third gift, and, if ingenious, will soon find that he has now greatly enlarged opportunities of building and making designs.

Children who have had both, always prefer the fourth to the third gift, because a larger variety of "real forms" may be made therefrom. It presents, however, greater difficulties, for, whereas the little cubes could be laid on any side, and yet occupy the same space, the bricks cannot be used without a certain amount of consideration as to what is the best position, and how they can be fitted together most advantageously. After independently examining and testing the capabilities of his new treasure, the child is told to divide the cube into halves, quarters, and eight equal parts, as in the former gift; and then asked to examine one of the bricks separately and explain in what it resembles the cube. One will say it has the same number of sides; another the same number of edges; a third will be struck first by the fact that it has the same number of corners; but a somewhat advanced pupil will be needed to say that there are in both the same number of angles, these all being right angles; this must be pointed out, teaching the words and their meanings, and also it will be necessary to explain what is a plane surface, the surfaces of the bricks and cubes being plane surfaces. It is not at first easy for the child to appreciate that there is the same quantity of wood in the eighth part of each of the two gifts, and it can be illustrated by letting him weigh one in each hand, and by giving him two cubes of clay, wax, or bread, of the same size, and letting him divide them as in the two gifts, afterwards putting them together again. The brick (parallelopiped is too long a word for baby lips) when laid flat on its broadside on the table, occupies twice as much space as the cube, while if stood on its end it occupies only half the space, but is twice as high. This is at first found puzzling; but the similarity of bulk in dissimilarity of form may be illustrated by taking a cube of clay or wax and then moulding it to the form of the parallelopiped, and *vice versâ*. This clearly demonstrates that, without increase or decrease in weight or quantity, the same piece of matter can be made to assume both forms. The comparative capacity of the two cubes may be tested in a variety of ways. By arranging the parts of the two lengthways, like two planks, we can see which can give the greater length, and similarly for height, while it is not difficult to discover which can enclose the greater space. After such comparisons have been carried on, of course varied by building, stories, and exercises, for a few lessons, the third gift may be put away for a time, and the fourth used alone. As before, the exercises may be divided into those on life forms, symmetrical forms, and geometrical or mathematical forms. The latter are mere repetitions of the former lessons, so I need not descant on them here ; but it now becomes possible to increase the knowledge of measurements, and to teach some useful lessons in weights. In balancing the bricks, the centre of gravity has to be found, and this may be made the occasion for some very valuable lessons on the laws of gravity, which can be illustrated by common objects, such as pieces of paper, corks, leaden weights, and so on. By standing the bricks on end to form a high wall, and knocking the whole down by touching the first brick, the law of transmitted motion may be illustrated.

By supporting one brick against another the law of *resistance* may be shown, and the child led gradually to make buildings showing clearly both the law of balance and resistance in one and the same form.

OBJECTS.

The simplest exercise is to arrange the bricks in a long straight line to form a beam, which may then be divided into two shorter beams, which can be called railway lines. After showing how a train comes puffing along the lines, and saying something about the construction of railway engines, a tunnel can be built (Fig. 37). I give full directions for this as they should be given to the pupil, because, in order to teach the use of words, verbal instructions should be always given in this way. The child must not only be *shown* how to work, but must also be *told* how to work, and taught to obey the word of command. Instructions for the making of other forms can easily be arranged on the model of the following :—

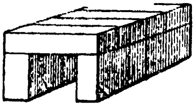


FIG. 37.

" Place the cube upon the table three inches from the edge, with a cut from back to front. Take the top right-hand brick, place it upon the table four inches away at the right, upon a long, narrow surface, and lying from front to back. Take the top left-hand brick and place it on the table, upon a long, narrow surface, one inch from the one first placed, and *parallel* to it.

"Take the next upper right-hand brick and place it upon the table behind the one first placed, and touching it by a short, narrow surface. Take the left-hand upper brick and place it behind at the left, touching the second brick placed by a short, narrow surface. Place the next right-hand upper brick over the top of the tunnel, just in front, and lying on its broad surface. Place the left-hand upper brick behind, lying in the same way, and touching by a long, narrow surface.

"Place the next right-hand brick over the top, lying upon a broad, long surface, touching by a long, narrow surface; the last brick at the back in the same way, and the tunnel is completed."

After this the child will be much interested to learn how and why tunnels are made. Begin by asking, "Have you ever been in a tunnel?" or reminding him of some occasion on which he passed through one; and then tell him how the workmen excavate and brick them up. You will find the blasting operations will specially interest him, as gunpowder has a great attraction for most youngsters. After passing through the tunnel the train very soon comes to a railway bridge (Fig. 38). Through this bridge two trains can pass going in one direction and two in the other, there being four sets of rails, making in all eight lines. The bridge has five immensely strong supports, and its top is formed by three beams. Over the beams there is a roadway, and on this horses and carts and people can pass to and fro. One day a boy named Fred went across the bridge with his mother, and, after watching the trains pass, they walked on till they came to a well, and, just as they came up to it, five little boys were gathered round it in great excitement, as they had got a little kitten which they were going to drown. Fred's mother ran up and drove away the boys, and was only just in time to save the kitten, which was trembling with fear on the wall round the well (Fig. 39). Fred was very glad they were in time, and asked if he might take the kitten home with him, and, as his mother said he might, they both sat down on a seat (Fig. 40) to make friends with it. Just opposite the seat was a monument (Fig. 41), and Fred's mother told him that it was raised to the memory of the soldiers who died in the Crimean War.

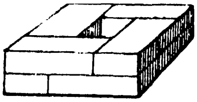


Fig. 39.

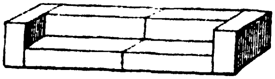


Fig. 40.

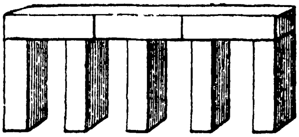


Fig. 38.

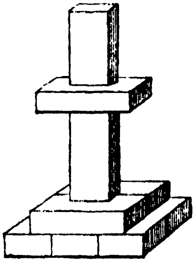


Fig. 41.

[Here an explanation can be given. Other monuments can be built, and historical events connected with them related. The Guttenberg monument can be mentioned in connection with the invention of printing, and so on.]

When Fred and his mother were rested, they walked home, passing a bee-hive [build one, and say something about the habits of bees] and a stable [build one] on the way; and when they got quite near they saw nurse looking out of a window on the second story of the house (Fig. 42). Fred had the kitten still in his arms, and held it up to her. She looked very pleased, and made a sign for him to bring it to her, so he ran upstairs (Fig. 43). In Fig. 43, which shows the construction of a spiral staircase, some delicacy of touch is required, and a useful lesson on gravity is given. The bricks are laid upon each other so that all the corners at one end are in a perpendicular line, and one brick is placed upright under the back for a support. Such stories serve to rivet the attention of children, and they can be made to convey a large amount of information. They are also to be made a means of cultivating the memory, for on after occasions the child is asked to reconstruct the forms he constructed before, and to repeat what he was then told. He may be allowed, if he likes, to improvise a little story embodying what he knows about the subject; and children are very pleased at doing this if listened to with grave interest. But on no account be betrayed into a laugh at any blunders, for this is most

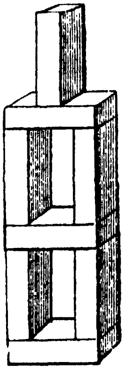


Fig. 42.

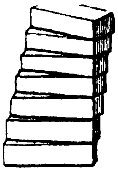
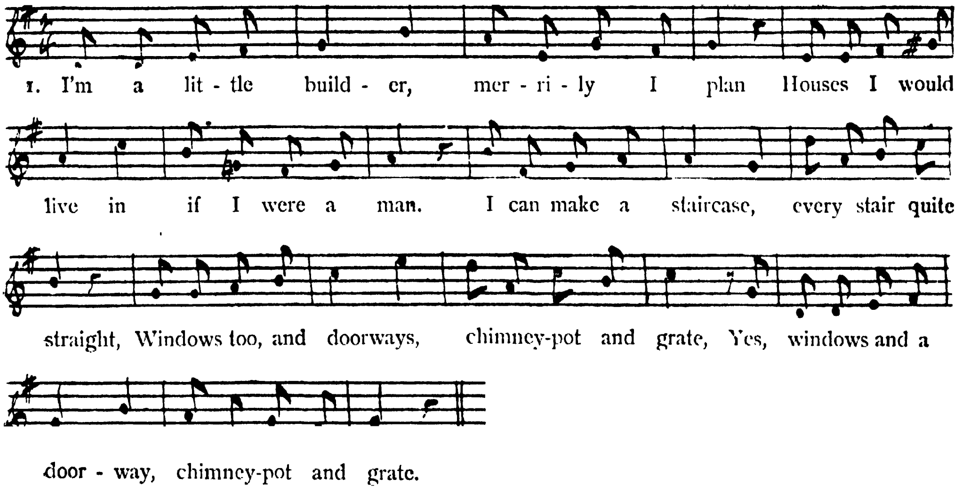


Fig. 43.

hurtful to a child's feelings, and will prevent it ever taking the same interest in the matter again. Correct blunders gravely and kindly. Children are very quick to detect ridicule, and fret greatly if subjected to it. Appropriate action songs should be introduced into the lessons; and I hope the children will like the following, which my brother, Mr. F. L. Ballin, has kindly composed for their behoof:—

THE LITTLE BUILDER.


1. I'm a lit - tle build - er, mer - ri - ly I plan Houses I would
live in if I were a man. I can make a staircase, every stair quite
straight, Windows too, and doorways, chimney-pot and grate, Yes, windows and a
door - way, chimney-pot and grate.

II.

I can make a garden, beautiful and green,
With the prettiest flowers you have ever seen;
There I plant a lily, here a rose-tree fair,
And will grow bright pansies in the summer air.

III.

I will have a dove-cot, all the doves say *Coo*,
Little hutch for rabbits, and a bee-hive too;
Busy bees make honey, while they gaily hum,
If you're good and love me, I will give you some.

A very great variety of so-called *real* or *life* forms may be made with this gift, and much valuable instruction on all sorts of subjects given in connection with them.

SYMMETRICAL FORMS.

The remarks on this subject contained in Chapter IX. also apply to this gift, and a very large variety of forms may be made by starting from different bases, as with a closed or open centre, and so on. The directions can be given as follows :—To make a 4-inch square (Fig. 44) : “Place two bricks side by side, touching by long, narrow surfaces, lying from front to back on broad, long surfaces. Place two bricks at the right, touching the two first placed by short, narrow surfaces, lying on broad, long surfaces from left to right ; two behind touching by short, narrow surfaces, lying on broad surfaces from back to front ; two at the left touching the last two placed by short, narrow surfaces, lying on broad surfaces from left to right.”

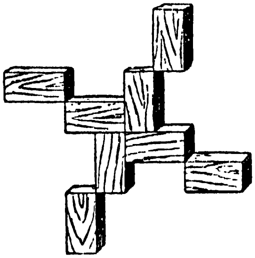


FIG. 46.

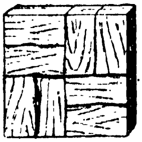


FIG. 44.

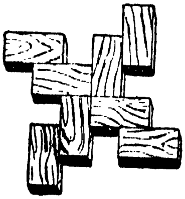


FIG. 45.

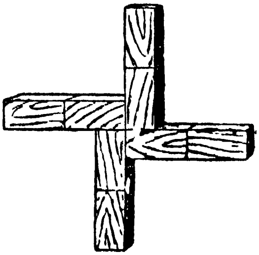


FIG. 47.

To make Fig. 45 -“ Slip right-hand back brick one inch up ; left-hand front brick one inch down ; right-hand front brick one inch to the right ; left-hand back brick one inch to the left.”

Fig. 46 is made by following the same directions a second time :—“ Slip the right-hand brick one inch up ; the left-hand brick one inch down ; the back brick one inch to the left ; the front brick one inch to the right.”

The position shown in Fig. 47 is obtained as follows :—“ Turn the right-hand brick back so that it lies upon a broad surface from front to back, touching by a corner. Turn the left-hand brick forward so that it lies upon a broad surface from front to back, touching by a corner ; turn front brick back towards the right so that it lies upon a broad surface from left to right, touching by a corner; turn the back brick towards the left, so that it lies upon a broad surface from left to right, touching by a corner. There is now but one move for each brick to bring them back to the first position."

It is not necessary for me to give more directions in this line, as new forms and series of forms are easily discovered and planned; but it is well to develop the series, and to encourage the pupil to make fresh developments. Cutting out coloured papers to the forms made, gumming them on sheets of cardboard, and drawing the forms in crayons on ruled paper, are interesting occupations to accompany this gift.

Gifts 3 and 4 can be used together, and more advanced number lessons can be given, especially counting exercises; the cubes and bricks can be placed alternately, and exercises in adding and subtracting in one's and two's can be done. Then, with the two gifts used together, more advanced buildings and symmetrical patterns can be made, and the child's artistic and creative faculties further developed.

ADDITIONAL NOTES ON THE USE OF GIFTS III. AND IV. FOR TEACHERS.

Bear in mind the twofold value of the gifts: first, the definite *teaching* or *instruction* in number, language, form, and colour to be imparted; and, secondly, the *education* or *training*—physical, mental, and moral—to be given through these gifts.

I. LESSONS IN NUMBER, with either or both gifts.

a. Counting exercises.

Cubes or *bricks* to be placed small distances apart, that the conception of the units through touch and sight may be definite and concise. Children should from the first be led to count forwards and backwards. Subtraction, or the taking away of a number, if taught thus is as easily acquired as addition or the adding of numbers.

b. The analysis of a number.

By that I mean finding the number of ones, twos, threes, &c., there are in eight or sixteen, and the ways in which eight or sixteen can be broken up, thus—

$4 + 4 = 8$ $8 + 8 = 16$
$6 + 2 = 8$ $6 + 10 = 16$
$7 + 1 = 8$ $9 + 7 = 16$
$5 + 3 = 8$, &c. $4 + 12 = 16$, &c.

c. Idea of fractions, thus—

(a) Division of the *whole* into *parts*. To make the idea of halves, quarters, eighths, &c., quite clear, these fractions must be shown in other ways than by gifts ; apples, biscuits, squares of paper, &c., must be divided, and the child made to see that a *fraction* is the equal division of a whole into a definite number of parts.

(b) Next must come the comparison of one fraction with another, *i.e.*, of a quarter and an eighth, a half and a quarter.

(c) *Arithmetic in fractions*, such as : In one whole, how many halves, quarters, &c. ? If I have seven-eighths, how many wholes, halves, and quarters, have I ?

II. LESSONS ON FORM WITH GIFTS III. AND IV.

(1) Give idea of position—top, bottom, back, front, &c.
(2) Difference between piling up and laying out side by side.
(3) Making objects—chairs, tables, churches ; *a.* from imitating the teacher ; *b.* from dictation ; *c.* or a copy.
(4) Geometrical figures to be made, such as squares and oblongs of different sizes, and placed in different positions and compared.
(5) Symmetrical patterns to be made and examined.

III. LESSONS IN LANGUAGE.

a. New words taught.

b. Children led to talk intelligently about their work, and to answer questions put by the teacher in full and complete sentences, thus: "What have you made there, Hugh?" *Hugh:* "I have made a garden-seat."

IV. COLOUR TEACHING with these gifts is *nil.*

EDUCATION GIVEN IN AND THROUGH THESE GIFT LESSONS.

V. MENTAL TRAINING.
  a. The mind is made active by calling out the *self-activity* of the child and its *creative* instinct in the building exercises.
  b. By the *progressive* work definite ideas are formed in the mind.
  c. By the word and deed accompanying each other.

VI. MORAL TRAINING.
  a. Æsthetic sense is developed by making the symmetrical patterns.
  b. Habits of perseverance and industry are trained, also of accuracy and neatness.
  c. Accomplishing some definite piece of work in making a series of objects or forms trains the child's character.

VII. PHYSICAL TRAINING.
  a. In using the bricks, training is given to hands, fingers, and eyes.
  b. Balancing and stretching exercises strengthen the muscles.
  c. Both hands are to be used equally.

CHAPTER VI.

THE FIFTH GIFT.

THE fifth gift marks a very distinct advance beyond all those which precede it, and should not be given until the pupil is perfectly familiar with the uses and aspects of all of them. In fact, a considerable degree of mental development is needed before it can be appreciated, and a child under the age of six is rarely able to profit from it. This gift is an extension of the third gift, and all the lessons expended on the third gift (see Chap. IV.) may here be repeated with advantage. It consists of a 3-in. cube, divided twice vertically and twice horizontally, thus containing twenty-seven smaller cubes of the same size as the eight cubes of Gift III. On removing the lid of the box, however, a further difference than that of number is at once perceived. The upper surfaces of nine cubes are visible. Of these the first three are ordinary cubes; but each of the second three is divided diagonally into two triangular prisms, and each of the third set of three is divided twice diagonally into four triangular prisms, of equal size, each being half the size of the larger prisms. The formation of these should be illustrated by dividing cubes of clay, wax, or bread. Removing the top layer of cubes, another set of nine becomes visible, these being undivided, and beneath this is still another set of undivided cubes (Fig. 48). Thus the number of pieces contained in the gift are entirely multiples of three. There are twenty-one (3 × 7) undivided inch cubes; three cubes divided into halves (3 × 2 = 6), and three divided into quarters (3 × 4 = 12), in all thirty-nine pieces. The child still has the cube which he has previously known, but in its unity much complexity has been introduced by the additional numbers, which permit of great mathematical advances. Lessons on number, however, should not be introduced too soon, and it is best to leave them to the last, as in dealing with the third gift. In this new gift the child is first to be led on from the known to the unknown, by means of the diagonal cut, and it must be explained to him that this is the intermediate between the contrasts vertical and horizontal, with which he is already familiar. He is now for the first time introduced to the triangle, and its

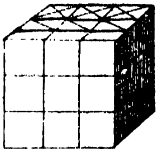


FIG. 48.

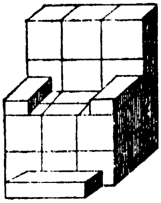


FIG. 49.

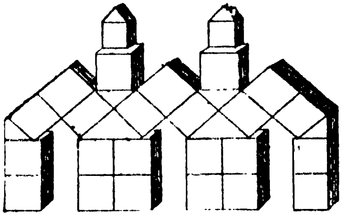


FIG. 50.

aspects should be impressed upon the child, and illustrated by other triangles, A glass prism may be given and the reflection of light through it forming the spectrum shown. A toy triangle, the musical instrument so called, may also be given at the end of the first lesson, and an appropriate song taught, to be sung afterwards when the gift is used. In one of the first exercises the triangular blocks can be laid on their oblong faces to form a gipsy encampment. Taking one of the half cubes, we find it has one oblong face, two square faces, and two triangular faces, and it is necessary to distinguish these by name in order afterwards to be able to give clear instructions when making "forms." At first, free play with the gift should be permitted, to allow the child to make acquaintance with the varied capacities of the new toy, and the first thing he will do is to make buildings with triangular roofs. After familiarity with the gift has been acquired by free play, during which the teacher should endeavour to impress various points of importance on the child's mind, it is well to proceed, as with Gift III., to

LIFE FORMS OR OBJECTS.

Place the cube as a whole before the child with the twice-divided cubes at the upper part behind, as in Fig. 48. Let him : 1. Divide it three times in length. 2. Join it again. 3. Divide it in height. 4. Join it again. 5. Divide it in breadth. 6. Join it again. 7. Then direct him to place the three top front cubes on the three top back cubes, and you have a flight of steps or flower-stand. 8. Divide this twice in length, and you have three narrow flights of steps. 9. Unite them again. 10. Take away the middle cubes and place them on the top ones, and you have a seat with a high back. 11. Lift the first and second rows from the back and substitute them for the row of twice-divided cubes beneath. This row contains twelve quarters or prisms. Make three pillars each of four quarters. Place one on the right and one on the left of the seat, and the third before it, so as to have an armchair and foot-stool (Fig. 49). Forms with this gift may be so complicated as to need very careful directions. Thus, for example, to make Fig. 50, a gate with three entrances, tell the child to make two pillars each of two cubes, and to place them a cube's breadth from each other. On the top of each pillar place a quarter cube with the slanting side inwards. Then place a whole cube with the corner downwards, resting on the slanting surface of each quarter cube ; complete the arch with a half cube placed corner downwards as keystone. This forms a single gate ; to make one with three entrances, place three single gates side by side in a line, replace the three half cubes at the top by three whole cubes, and place half a cube with the flat side uppermost between the first and second roofs, and the same between the second and third. Make four half cubes into two whole cubes and place one of these on each of the flat surfaces of the half cubes placed just before. With four quarter cubes make two pillars and place them on the cubes just set, then use the two remaining quarter cubes to roof the pillars or watch-towers so constructed. The number of objects it is possible to construct with this gift is enormous, and very many lessons may be devoted to them, but limited space prevents my entering more fully into the matter.

The variety of symmetrical forms, or forms of beauty, which can be made from the fifth gift is endless, and a constant source of amusement and profit. We should begin with the simplest exercises with the triangular blocks, as by joining the acute angles of four halves to form a hollow rectangular figure (Fig. 51). From this basis a series of other figures may be made, as, for example, Fig. 52, and it is well to work out each series in a separate lesson. The methods of working out such a series may be seen at a glance from Figs. 53, 54, and 55, and the child should be instructed at each step which brick to move.

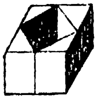


FIG. 51.

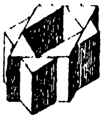


FIG. 52.

After a little practice he should be encouraged to modify old designs,

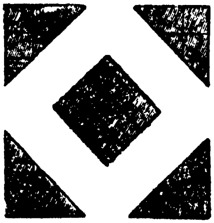


FIG. 53.

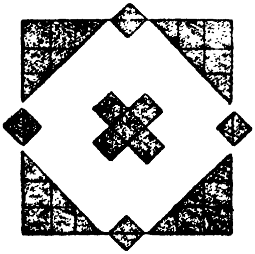


FIG. 54.

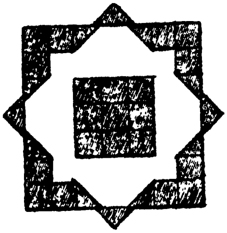


FIG. 55.

and make new ones for himself, and to reproduce the forms he has made, by cutting pieces of coloured paper and pasting them on to cardboard. The blocks may be laid upon paper and pencilled round their edges, so that the paper can be cut accurately to the right size. Each series after being brought to a certain point can be reversed back to the beginning, and at each new lesson the child should be called upon to construct by himself something which at the last lesson he formed under instructions. Delicacy of touch is cultivated by the use of this gift, as the triangular pieces need to be placed with great care; but the visible results of neatness and patience reward the little one's efforts.

The most important aspect of this gift is in its

GEOMETRICAL AND MATHEMATICAL FORMS,

which should be reserved until many lessons have given perfect familiarity with its parts. All such mathematical teaching should be carefully introduced, and varied by songs and games. After a little building the parts should be put back into the box, the smaller parts being arranged, as in Fig. 48, p. 46, which may be found a little difficult at first. This being done, the child should be questioned to ascertain what new observations he has made, and be led to point out the resemblances and differences from the former gifts; thus—the box has the same number of surfaces, six; the same number of corners, eight; and the same number of edges, twelve. The surfaces are of the same kind, being plane, each bounded by four straight lines of the same length, which unite in points forming four plane right angles. The box differs from the others because it is larger. It is larger by one-third (an inch—measure it) in three directions, namely, in length, breadth, and thickness. Then let the child describe the construction of the various cubes into wholes, halves, and quarters, looking at them meanwhile. Next, let him take out one of the halves, and say what he notices about it, namely, that it has five plane surfaces, nine edges, and six corners. Three of the surfaces have four sides, each of which is bounded by four lines, which form four right angles. The other two surfaces have three sides, which are bounded by three lines—one long and two short—

the three lines meeting in three points. In the point where the two short lines meet, a right angle is formed; but at the other two points the angles are not so large, and these are called acute angles. Two of the four-sided surfaces are equal squares; but the third and the largest is a rectangle, but not a square. Next examine one of the quarters. At first sight the only difference that appears is that it is smaller; but on observation it is seen that this has only one square surface, and that is its largest surface, corresponding in position to the oblong surface of the half. Two of its surfaces, corresponding to the squares of the half, are rectangles, but not squares. The long side of this prism is the same length as the short side of the larger one. Let the child place two halves with their oblong surfaces touching, and a perfect cube is the result. Let him unite two of the square surfaces, and you have a figure like the roof of a house; it has three four-sided surfaces, all of which are rectangles, not squares—and two triangular surfaces, each of which has two acute angles and one right angle. Turn round one of the halves so as to unite its other square surface with that already in position. Now you have a solid with six plane surfaces, twelve edges, and eight corners; two of the surfaces are square, two are rectangles, and two are parallelograms, each of which has two acute angles and two obtuse angles. Unite the largest surfaces of two of the quarters, and a prism with two square surfaces and four rectangular surfaces, is formed: this is called a parallelopiped. Unite two rectangular surfaces to form a solid precisely like one of the halves. Turn one of the quarters as you turned the half, and a solid of the same shape as that previously formed will appear, but now the squares are the largest surfaces. Form two parallelopipeds. Add two other quarters, and make a solid with seven sides, which shall have seven plane surfaces, five four-sided surfaces, with all their angles right angles, two of them being squares; and two five-sided surfaces, each of which has two right angles, two obtuse angles, and one acute angle. Next, with these six quarters form a solid with eight plane surfaces, eighteen edges, and twelve corners. Six of the surfaces are four-sided, two being squares and four rectangles. The other two surfaces are six-sided, each having two right angles and four obtuse angles. Of course, these are somewhat advanced lessons in solid geometry, and must be introduced carefully by degrees, the child being questioned at each step to ascertain its perfect understanding, and never fatigued by too great a strain at any one lesson. An enormous variety of exercises to develop form, number, and order can be given, and the following are a few suggestions :—

1. Form a square of nine, each corner cube being divided into halves (one of the corners must be a quartered cube if you have only one box of this gift), and that in the centre into quarters. 2. Divide the square into two equal right-angled isosceles triangles. 3. Divide each of these again into two equal right-angled isosceles triangles, making in all four. 4. Unite the bases of the triangles to form two squares. 5. Unite these squares to form a rectangle, with its sides double the length of its ends. 6. Take one-fourth of the rectangle from one end, and place it at the other, to form a rhomboid, the sides of which are double the length of its ends. 7. Divide this into two equal rhomboids. 8. Unite these to form one rhomboid, the sides of which shall be four times the length of its ends. 9. Divide this into four equal triangles. 10. Unite these into two equal squares, and place them one upon the other to form a square prism. 11. Divide this into two equal triangular prisms. 12. Take away four pieces, and of the remainder make a six-sided prism, which shall have two six-sided and four rectangular surfaces, eighteen edges, and twelve corners. 13. Divide this figure into two equal four-sided prisms, of which each shall have two square and four rectangular surfaces, and four triangular prisms, of which each has two triangular and three rectangular surfaces. 14. Unite these to form two rhomboidal prisms, each of which has two surfaces rhomboids, two squares, and two rectangles. 15. Unite these into one, which shall have the same form, and so on with other numbers of pieces, making hexagons, octagons, and other geometrical forms. At each step, surfaces, edges, and corners should be counted, and the names of the form and of its parts thoroughly impressed on the pupil. Both in the above exercises and in all others, this gift is of the utmost importance.

TEACHING NUMBERS.

The learning of fractions, begun in the third and fourth gifts, is here greatly advanced, and in play the following table may easily be illustrated :—

$\frac{2}{2}$ = 1 cube.
$\frac{4}{2}$ = 2 cubes.
$\frac{6}{2}$ = 3 cubes.
$\frac{4}{4}$ = 1 cube.

$\frac{6}{4}$ = $1\frac{1}{2}$ cube.
$\frac{8}{4}$ = 2 cubes.
$\frac{10}{4}$ = $2\frac{1}{2}$ cubes.
$\frac{12}{4}$ = 3 cubes.

These fractions should also be shown with other objects, so that the child may not be led to think that what he learns only applies to cubes. In dividing the cube in different ways, the meaning of the following table is quickly learnt, although its signs and figures are ignored :—

$3 = 27$

Further advances into fractions are made as the gift is more thoroughly understood.

Addition and subtraction may easily be practised—five-ninths taken from nine-ninths (one whole) leave four-ninths, and so on ; and counting lessons may be conducted as follows :—

One whole = Three-thirds.
One whole = Nine-ninths.
Two-thirds = Six-ninths.
Three-ninths = One-third.

One-ninth = Three twenty-sevenths.
Two-ninths = Six twenty-sevenths,
&c., &c.,
and conversely.

The twenty-seven cubes may be imagined as all divided into halves, of which there would be fifty-four, or into one hundred and eight quarters, and so on. Multiplication and division should first be taught with the whole cubes, and may be carried on to high numbers by the aid of buttons, beads, or a multiplication frame. After this we can add the halves and quarters, and go on to more elaborate lessons in fractions ; beginning simply, and going on to the more difficult, as in the following exercises, during which the child should have the pieces in its hand to illustrate what it says all the time :—

1. Count the halves, $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3 ; then back again, 3, $2\frac{1}{2}$, 2, $1\frac{1}{2}$, 1, $\frac{1}{2}$.

2. Do the same with the twelve quarters—$\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$, $1\frac{3}{4}$, 2, $2\frac{1}{4}$, and so on up till twelve and back again.

3. Place halves and quarters alternately, and count $\frac{1}{2}$, $\frac{3}{4}$, $1\frac{1}{4}$, $1\frac{1}{2}$, 2, $2\frac{1}{4}$, $2\frac{3}{4}$, 3, and so on.

4. Take six cubes and place the six halves on them like little hayricks, about which a story can be told, and count : $1\frac{1}{2}$, 3, $4\frac{1}{2}$, 6, $7\frac{1}{2}$, 9, and back again.

5. Place twelve cubes with a quarter on each, like little hen-coops, and count : $1\frac{1}{4}$, $2\frac{1}{2}$, $3\frac{3}{4}$, 5, $6\frac{1}{4}$, $7\frac{1}{2}$, $8\frac{3}{4}$, 10, and back.

6. Take twelve cubes, place a half on the first, a quarter on the second and so on alternately, then count : $1\frac{1}{2}$, $2\frac{3}{4}$, $4\frac{1}{4}$, $5\frac{1}{2}$, 7, $8\frac{1}{4}$, $9\frac{3}{4}$, 11, and back again, as before.

7. Arrange the cubes and sections of them in various ways, and let the child add them up to reach such a result as :—$2\frac{1}{4} + 1\frac{1}{2} + 2\frac{1}{2} + 1\frac{1}{4} + 2\frac{1}{2} + \frac{1}{4} + 1\frac{3}{4} = 12$.

For multiplication and division let the child demonstrate and repeat as follows :—

a.	*b.*	*c.*	*d.*
$\frac{1}{4} \times 2 = \frac{1}{2}$	$\frac{1}{2}$ of $2 = 1$	$\frac{1}{2} \times 2 = 1$	$\frac{3}{4} \times 2 = \frac{6}{4} = 1\frac{1}{2}$
$\frac{1}{4} \times 3 = \frac{3}{4}$	$\frac{1}{4}$ of $3 = \frac{3}{4}$	$\frac{1}{2} \times 3 = \frac{3}{2} = 1\frac{1}{2}$	$\frac{3}{4} \times 3 = \frac{9}{4} = 2\frac{1}{4}$
$\frac{1}{4} \times 4 = \frac{4}{4} = 1$	$\frac{1}{4}$ of $4 = 1$	$\frac{1}{2} \times 4 = \frac{4}{2} = 2$	$\frac{3}{4} \times 4 = \frac{12}{4} = 3$

e.	*f.*	*g.*
$1\frac{1}{4} \times 2 = 2\frac{1}{2}$	$1\frac{1}{2} \times 2 = 3$	$1\frac{3}{4} \times 2 = 3\frac{1}{2}$
$1\frac{1}{4} \times 3 = 3\frac{3}{4}$	$1\frac{1}{2} \times 3 = 4\frac{1}{2}$	$1\frac{3}{4} \times 3 = 5\frac{1}{4}$
$1\frac{1}{4} \times 4 = 5$	$1\frac{1}{2} \times 4 = 6$	$1\frac{3}{4} \times 4 = 7$

And so on in many exercises. These exercises should be also applied to the use of pennies, half-pence, and farthings, as the delight of handling real money will add to the zest with which they are carried out ; and proficiency may, I think, be rewarded with a little money gift, for it is good for children early to learn the value and use of money.

Comparison of Fractional Parts may also be taken with this gift, *e.g.* : Which fraction is the larger, $\frac{1}{3}$ or $\frac{3}{4}$, $\frac{2}{6}$ or $\frac{1}{3}$, $\frac{3}{9}$ or $\frac{2}{6}$, $\frac{2}{3}$ or $\frac{3}{4}$, of a whole cube apple, or cake?

It is not difficult to see how invaluable ideas acquired by work of this kind are to the child when we come to the fraction sums, one great difficulty children experience with these sums being their inability mentally to estimate the relative value of the fractions used.

Another excellent exercise with Gift V., in which number and form teaching are combined, is as follows :—

a. Find the smallest square, *i.e.*, one surface of the cube, then make a square double the size in as many ways as possible (see Figs. *a, b, c*).

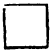
b. is a square made of 1 cube and 4 quarter cubes.

c. is a square made of 8 quarter cubes.

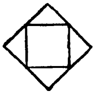
d. is a square made of 4 half cubes.

e. is a square made of 4 whole cubes.

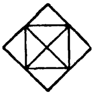
a.



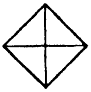
b.



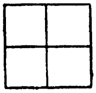
c.



d.

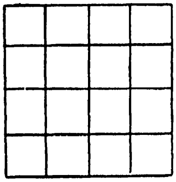


e.



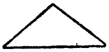
f.

g.

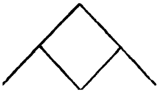


h.

i.



k.



f. is a square made of 4 whole cubes, 6 half cubes, and 4 quarters = 8 whole cubes.

g. is a square made of 16 whole cubes.

h. is the smallest *triangle*, viz., one surface of the quarter cube.

i. is a triangle made of one surface of a half cube.

k. is a triangle made of one whole cube and two halves.

In each case the square or triangle is double the size of the previous one.

SUGGESTIONS FOR THE YOUNG KINDERGARTEN TEACHER'S USE OF GIFT V.

All the suggestions given for the use of Gifts III. and IV. hold good here.

I. Order for Number Lessons.

- *a.* Repetition of counting-lessons given with the previous gifts.
- *b.* Analysis of the number twenty-seven.

A. *Fractions.*

- *a.* Recapitulate the previous teaching.
- *b.* Show new fractional parts—$\frac{1}{3}$, $\frac{1}{9}$, $\frac{1}{6}$, $\frac{1}{12}$, &c., and the different ways they can be obtained from the whole.
- *c.* Compare fractional parts.

B. *Arithmetic on Fractions.*

- *a.* Whole and its parts—one whole, how many $\frac{1}{3}$, $\frac{1}{9}$?
- *b.* Parts given and number of wholes they make, *e.g.*, 9-thirds, how many wholes ?
- *c.* Mixed numbers, *e.g.*, a whole and 2-thirds, how many thirds and ninths ? *Ans.:* In a whole and 2-thirds there are 5-thirds or 15-ninths.

N.B.—At first, let each child have its gift, and work the answers by touch and sight. Then find out the answers by sight alone, and then work mentally. With older children let the fractional signs be used—$\frac{1}{3}$, $\frac{1}{9}$, &c. At the end of each lesson let the parts used be moved to make some building or symmetrical pattern ; let it be clearly seen what the number is which is used, thus the particular number-teaching of that lesson is kept prominently before the children.

II. Order for the Form Lessons.

- *a.* Examination of cube.
- *b.* Examination of half, and comparison with cube.
- *c.* Examination of quarter and comparison; cube and half geometrical figures to be made with one, two, or more cubes, halves, or quarters.

d. Making squares or triangles of different sizes.

e. Making a geometrical figure and dividing it up into other geometrical figures, child always stating what it has done.

f. *Symmetrical* patterns made with *geometrical* foundations, and then by slight changes of the parts altered into other patterns.

CHAPTER VII.

THE SIXTH GIFT.

THE sixth gift consists of a 3-in. cube divided into twenty-seven parallelopipedons, or solid oblong pieces, of which three are divided in the length so as to form six four-sided prisms 2 in. long, and six are divided in halves in the width, so as to form twelve half cubes or square tablets, or right prisms of 1 in. square and $\frac{1}{2}$ in. in thickness—in all, thirty-six pieces; eighteen resemble Fig. 56, being bricks like those of the fourth gift; six resemble Fig. 57, and are entirely new forms; and twelve resemble Fig. 58, and are also new forms, though seemingly more familiar from their greater likeness to the cube. This gift stands in just the same relation to the fourth gift as the fifth gift stands in relation to the third, of which it is a development. We meet again with the brick forms of the fourth gift, and the exercises given under that head may now be carried out to a considerably

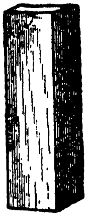


FIG. 56.

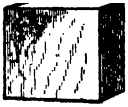


FIG. 58.

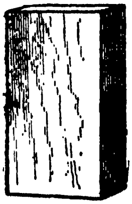


FIG. 57.

greater extent. Gift V. is, however, richer in the possibilities of variety of symmetrical forms which it affords; but the present gift offers far more facilities for the construction of "real objects," and in its closer resemblance to a box of bricks is, as a rule, a greater favourite with the little ones. After having examined the cube as a whole, mentioning the number of surfaces, angles, and edges as before, the child learns to notice and to name its different parts—bricks, pillars, and squares. There is a fresh variety of surfaces and edges to become acquainted with, and advantage must be taken of the opportunity to deepen the appreciation of equal quantities put in different forms, begun by the third and continued in the fourth gift. Here, again, the best means of fixing the impression on the child's mind is by modelling with clay or wax, using the same piece to make the different forms, so as to show that it can assume either. The same quantity of wood is in the square as in the pillar, and both weigh exactly the same. So that he may become acquainted with the various pieces and their relations, let him arrange them on the table in all the positions he can think of, and he will thus discover many symmetrical forms. Then let him put the cube together and divide it into halves, thirds, and sixths, and repeat with this new gift the fractions learnt with Gift V. Frequent repetition is most important with young children, and this repetition is doubly valuable when the form in which the teaching is given varies somewhat. Then let the child measure the different parts, which may be called for convenience A, B, and C, and describe them—A, is an oblong like those of the fourth gift; B, is a pillar or square prism with four rectangular surfaces, and two square surfaces, each rectangular surface being equal to four surfaces, the long surface measuring 2 in. and the square surface $\frac{1}{2}$ in.; C, is a slab having two square surfaces and four rectangular surfaces, each square surface, which measures 1 in., being equal to two of the rectangular surfaces, which are 1 in. long, but only $\frac{1}{2}$ in. deep. To give the child a clearer perception of form and number, we can now pass to building from dictation and

LIFE FORMS OR OBJECTS,

to construct which the following instructions, beginning from the simple and going on to the complex, may be given. 1. Of one C make a base, on which place one B as a column. *Q*. What are its measurements? *A*. Two and a half inches high, the base 1 in. square. And so proceed, asking the measurements each time. 2. Form a gateway with three C pieces. 3. Form a gateway with two of A and two of B. 4. Form a similar gateway with four of A. 5. With four of A and two of C make a gateway 3 in. high and 2 in. wide. 6. With two of A and three of B make a table 2½ in. high, and 2 in. square. 7. With five of A and 2 of C make two windows 1 in. wide and 1½ high. 8. With the whole number of pieces construct Fig. 59, as follows: Lay down a row of six A, on the centre of each of these place one C, and on the centre of each C one B, then on each B balance a C, on the top of these place a row of five A, on them a row of four A, then two A, and finally surmount the whole with one A, after which take the measurements. 9. With 7 of A, three of B, and six of C, make the front of a house 7 in. long, 4½ in. high, with a chimney ½ in. above the roof, five windows each 1 in. square, and a door 2 in. high and 1 in. in width. 10. Direct the pupil how to make a house-front as shown in Fig. 60. 11. Take eight of A, six of B, and ten of C to construct a warehouse front, three stories high, 6 in. in height, 7 in. in length, with a door 2 in. high and 1 in. wide, and eight windows of an inch square. 12. Make the interior of a stable, with a doorway 3 in. high and 1½ in. wide, four stalls for horses, each 2 in. high and 1 in. wide, and in each stall a manger 1 in. square. To do this needs seventeen of A and six of C. 13. With fourteen of A, three of B, and seven of C, make a monument 10½ in. high, the foundation of which shall be 4 in. square and ½ in. high, the second tier 3 in. square and ½ in. high,

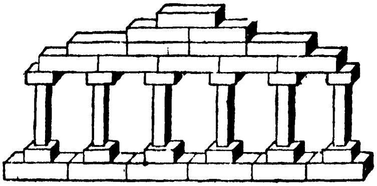


FIG. 59.

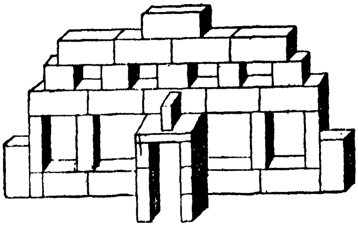


FIG. 60.

the third 2 in. square and ½ in. high. On this shall stand a pedestal 3 in. high and 1 in. square, and upon the pedestal a pillar 6 in. high and ½ in. square. How many solid inches does this require? 14. Direct the pupil to make with the whole number Fig. 61, and then inquire the measurements. I have described only a few of the complicated and difficult forms which may be constructed with this gift, as a guide to help the teacher in the invention and arrangement of others. After each form is built, an instructive story brought into relation with it should be told, and the child should be encouraged to make any observations it may suggest to him. Among the familiar forms for construction with this gift, are monuments, thrones, arm-chairs, wells, bedsteads with or without pillows, baths, colonnades, summer houses, a font, writing desk (Fig. 62), pulpit, drinking-fountain, and so on.

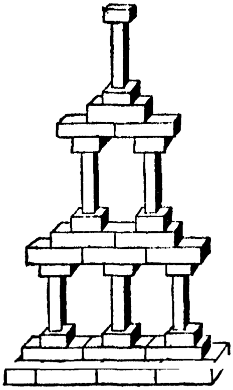


FIG. 61.

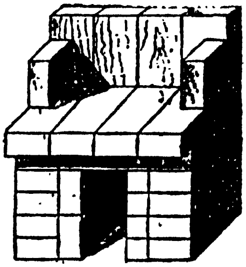


FIG. 62.

GEOMETRICAL AND SYMMETRICAL FORMS.

An endless variety of dictation lessons may be given in geometrical forms, but it is well to begin simply with the description of the material at hand, thus:—1. A, the large brick, has six surfaces, eight corners, and twelve edges. 2. B, the narrow brick or pillar, has six surfaces, eight corners, and twelve edges. 3. C, the square tablet, has six surfaces, eight corners, and twelve edges. In these numbers all the pieces resemble the cube. Two tablets laid one on top of the other form a cube. Laid end to end they form a large brick. Then compare and describe the likenesses and differences between the different pieces. 4. With three of B enclose a triangular space ½ in. in depth. 5. With three of A and three of B enclose a similar space 1½ in. in depth. 6. With five of B enclose a pentagonal or five-sided space. 7. With six of B enclose a hexagonal or six-sided space. 8. With the ends of four of A enclose a square, and fill the spaces between their other ends with four more of A, so as to enclose four triangles (Fig. 63). Count the number of angles so formed, and otherwise describe the figure. 9. With eight of A form an octagonal or eight-sided figure, placing them lengthways. 10. Instruct the pupil how to develop this into Fig. 64. 11. Place the eight bricks end to end to form an octagonal figure,

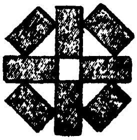


FIG. 63.

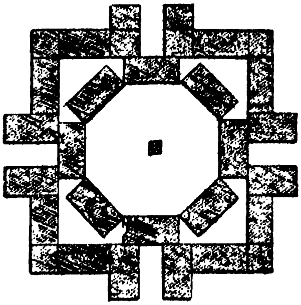


FIG. 64.

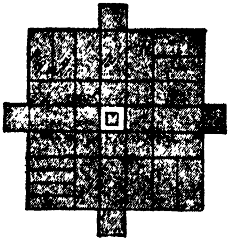


FIG. 65.

and from this basis develop other figures. 12. Let all the pieces be laid at right angles to form a compact whole, which is still a form of beauty (Fig. 65), before they are returned to the box. During lesson after lesson the formation of symmetrical figures may be continued, and a clever teacher should in this way impart a considerable amount of geometrical knowledge. The figures should be copied on to checkered paper as an aid to drawing, and to cultivate the use of the hand and eye.

I have now treated as fully as space permits the first six gifts of Froebel known as the solid gifts, and although I have by no means exhausted the possibilities of instruction to be derived from them, I trust that what I have been able to say may have proved suggestive, and helped to strengthen an interest in the subject. The first group, or six solid gifts, form, as it were, the foundation of the system. The second group deals with

Planes or Surfaces, and embraces—(1) Tablet Laying, (2) Paper Folding, (3) Paper Cutting, (4) Paper Plaiting or Weaving. The third group deals with Lines, and embraces—(1) Paper Twisting, (2) Stick Laying, Ring Laying, (3) Wood and Cork Work, and (4) Drawing. The fourth group deals with Points—(1) Pricking, and (2) Sewing, and in the fifth group are a variety of other occupations dealing with other materials and combinations. The proper study and development of these parts of the system serve to complete the early education, cultivate industry, steady the hand, accustom the eye to accuracy, and the mind to perseverance. They are therefore not to be neglected, and will be fully treated by Miss Elinor A. Welldon, who has kindly become my coadjutor in this book, and has also revised this first part.

SUGGESTIONS TO YOUNG KINDERGARTEN TEACHERS IN USING GIFT VI.

1. This should be introduced about the seventh year.
2. Allow the child to find for itself the connection with Gifts V., IV., and III., of Gift VI. as *a whole*, and of its parts.
3. Examination of Gift VI. by child to discover number of parts and their general appearance.
4. Measurement of parts.
5. *Building* to dictated measurements, or buildings made and then measured.
6. Symmetrical patterns made in the same way.
7. Geometrical figures made and measured.
8. Drawing of patterns made.

◆

PART II.

PLANE SURFACES.

BY ELINOR A. WELLDON.

CHAPTER VIII.

TABLETS.

KNOWLEDGE is acquired by the child first in a concrete form; the mind only passes by transitional and gradual stages to abstract thought. Froebel, realising this truth, made his gifts and occupations to be a transition, a passing over from the concrete to the abstract. We see this in the arrangement of the gifts and occupations, from the solids to the planes, and then to the lines and points.

The first six boxes of toys, known as the six gifts, comprehended all the solids, and have been fully treated in the previous chapters. We have now to consider the plane surfaces, and the first of these is the *Tablet*.

The tablets in use in the Kindergarten are of five kinds:—

1. Square tablets.
2. Right-angled triangles.
3. Equilateral triangles.
4. Obtuse-angled triangles.
5. Scalene triangles.

These tablets are made in polished wood, of two colours, the object being to awaken the child's sense of colour and to develop its taste.

Cardboard tablets are sometimes used, covered with coloured paper, but these, although much cheaper than the wooden ones, and most effective at first, soon lose their freshness and shape, and are consequently far less durable than the wooden ones.

TABLET LAYING.

In introducing this new toy, the child's attention should be drawn to the similarity between the square tablets and the cube of Gift III., an old and familiar friend. This may be done, either by chatting with the child and leading it to see that a cube can be made by heaping up square tablets, or by making a cube in clay or wax, and letting the child, with your help, cut up its clay or wax cubes into squares. What we want to impress on the child is the fact that the square tablet is a slice, one of the surfaces of the cube. We next want to draw attention to the law of contrasts and their reconciliation, on which law all Froebel's occupations and gifts are based. The cube and the square tablet are contrasts in form, and the link which connects these two is to be found in the brick of Gifts IV. and VI., a form already familiar to the child. In drawing the child's attention to these points, it is essential to use most simple language, avoiding as far as may be all technical terms, and above all allow the child to find out as much as possible by itself, mother or teacher only acting as guide or referee to assist the little one in making its many new discoveries. It is important, however, to see that the child forms clear and distinct mental pictures, and expresses itself simply and completely, and this can only be done by allowing the child to handle its new toy freely, and always to say what it notices : thing and word and word picture must ever go hand-in-hand.

The child should first have one square tablet given it, and this it should examine carefully, noticing (1) the four right corners or angles, as the child may and should call them ; (2) the four sides of equal lengths ; (3) that the sides are formed of two kinds of lines, vertical and horizontal. If the child is not familiar with the right angle, its attention should be specially drawn to the relative positions of the vertical and horizontal lines, and to the space formed when these lines meet, which is the right angle. Added interest and valuable mental training is given when at each point the child is encouraged to compare and test its newly-acquired knowledge in as many different ways as possible, *i.e.*, Have you ever seen any lines at right angles at all like these? it may be asked; and you will be surprised to find how many and varied are the illustrations the child will give, such as the sides and corners of the table, of a slate, of the window-panes and door-panels. (4) The child's attention should next be drawn to the square surfaces; their colour, smoothness, and number may be dwelt on, and reference made to the fact that whilst the cube had six square surfaces the tablet has only two, and that this is so because, whilst solids have *three* easily perceived dimensions, length, width, and height, the plane surfaces have only *two* dimensions, width and length. In this way a very large amount of valuable information is given, and the little one is kept happy and good because its desire to *know and do*, and its eagerness and self-activity are developed.

The square tablets, like the cubes and bricks of the gifts, can be used in a variety of ways.

1. As means for imparting definite ideas of form.
2. As means for picture representations of the objects the child can build.
3. As means for laying patterns, and so developing the child's artistic faculty and eye for symmetry.

1.—I have briefly indicated how a few simple lessons on form may be given, such as what the terms right angles, parallel lines, &c., mean, but more than this can be done; the child can be encouraged to place its one tablet first on its side and then on its angle, and to notice the different appearance and to describe what it sees (Figs. 1 and 2). Then the child may have a second tablet given it, and be led to place these in various oblong

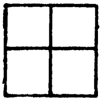


FIG. 1.

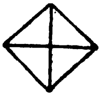
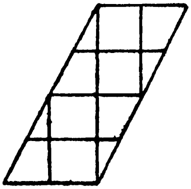


FIG. 2.

FIG. 3.

FIG. 4.



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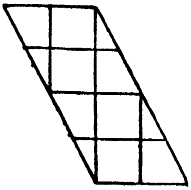
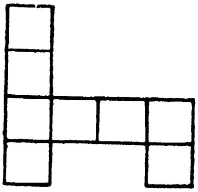


FIG. 6.

positions, standing from right to left, and from left to right, standing upright and lying crossways (see Figs. 3, 4, 5, and 6).

The oblong may be explained as a figure like the square, with four right-angles and four sides, running in parallel lines, the difference being that, whereas in the square all the four sides were the same length, in the oblong they go in two's, two sides being twice the length of the other two. Such exercises as these may be given with increased numbers of tablets, eight tablets being the limit to the number it is well to give a little child.

2.—The tablets may also be used as a means for teaching the child to make picture representations of objects it has built (see Figs. 7, 8, 9). It is well always to chat with the child about the picture it is laying, and also to encourage it to see how, by very simple alterations, new pictures can be made without first destroying the old one. Additional zest and pleasure is given when mother or teacher can compose and sing little verses about the pictures laid. The most unpretentious rhymes and easiest tunes delight the children, and are of real educational value.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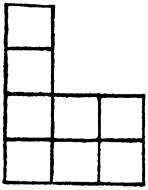
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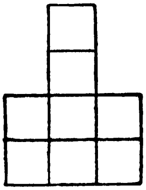


FIG. 9.

3.—The square tablets may also be used to lay patterns with. The two colours enhance the beauty and effect of these patterns. Let the child receive eight tablets, and with four of these make a square, and round this square place the other four tablets (*vide* Figs. 10, 11, 12, and 13), and then

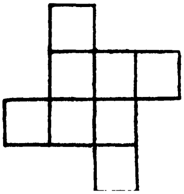
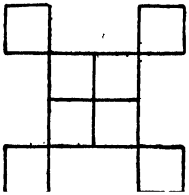


FIG. 10.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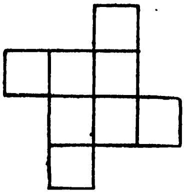


FIG. 12.

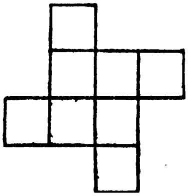


FIG. 13.

notice how, by slight movements of the outside tablets in regular order, turning to the right or to the left, many pretty changes can be made. With children of seven and eight years the tablets may be made of additional interest by giving them pieces of chequered paper, and encouraging them to draw with coloured chalks the patterns and objects laid with the tablets; and, later on, these same patterns can be drawn and painted, and so the children may not only be taught the use of pencil and chalk but also of brush and paint, and how to mix and blend colours, most delightful occupations to the small folk. It is best to use the chequered paper sold for the purpose, in order to give regularity to the figures. Different colours may be used in the same figure if symmetry is observed, as, for example, all the outer squares in Fig. 11 may be of one colour and the inner ones another, or the colours arranged alternately.

When the child has played for some time with its square tablet, and is fairly familiar with the lessons to be learnt, and the uses to which the square may be put, it should have one of the triangular tablets given it. The *right-angled triangle* is the first to give. The reason of this is not far to seek. The square tablet represented one of the surfaces of the cube, a familiar friend to the child from Gift III.— the triangular tablet, with its one right angle, represents one of the surfaces of the triangular prism in Gift V. As in Gift V. the triangular prism was half the whole cube, so the triangular tablet is half the square. In both cases the division is obtained by means of a cross-cut, *i.e.* the cube and the square are both divided diagonally, which is the same as saying the angle is cut in half, with the result of two equal-sized triangles. The child's attention should be drawn to the three-sided shape of its new plaything. It should be led to examine its sides first, and to notice that two are of the same length and one is longer, and that the longer side is always opposite the right angle, and is the base line of the triangle. Next the angles themselves should be examined: the right angle first, as that is an old friend, and it is always well to remember old friends, and recall all we can about them; and next the small or sharp angles, which the child may now learn to call *acute* angles. Very little difficulty will be found in leading even young children to see that in this case the *acute* angle is half the size of the right angle, and that in all cases it is smaller than the right angle. The child may now be led to place its triangle in any given position, to a simple direction, such as, Place your triangle with its right angle facing you (Fig. 14), or with its right angle to your right hand (Fig. 15), and in each case say where the base line and the acute angles are to be found.

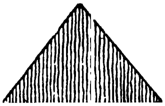


FIG. 14.

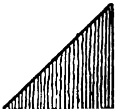


FIG. 15.

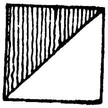


FIG. 16.

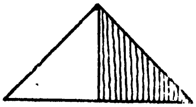
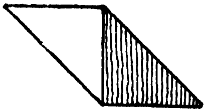


FIG. 17.

When the child has placed its one triangle in as many different positions as it can, and has talked freely about what it has done, a second triangle should be given, and the child encouraged to place these in as many different ways as possible, and to describe each figure (*vide* Figs. 16, 17, 18, 19).

More and more triangles may be given until the child has eight, and then a great variety of patterns may be made. The children should be led to draw their patterns on to chequered paper, and to chalk them in colours; the effects are pretty and artistic, they train the child's eye for symmetrical design and develop its inventive faculty—a latent power in every child, which only needs calling forth to be a source of immense amusement and of much educational gain. The number of tablets may be increased to sixteen, but beyond this number it is not well to go. Most artistic and effective star-patterns can be made, and, when carefully drawn and chalked in, and in the case of older children painted in, make most pleasing designs. (Figs. 20—25.)



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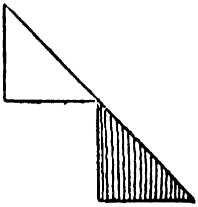

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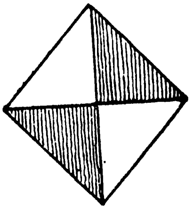


FIG. 20.

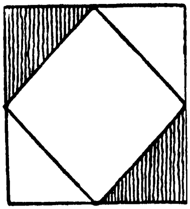


FIG. 21.

Such work as this teaches while it amuses. The little ones need to be led on step by step. A word of sympathy and occasional suggestive help is all that is needed, as a rule. Children love to work alone. The delight in doing unaided something really pretty and difficult is a great pleasure, and we should never hinder this effort, but rather cherish and foster it to the utmost of our power. Objects can also be laid with the triangles. I give a few specimen drawings.

Then squares and triangles may be given together, four of each at first, and the number gradually increased ; and thus fresh interest is awakened as the child sees pattern after pattern come forth (Figs. 20—27).

The tablets should never be given haphazard, nor the child allowed to help himself at will. We want to train our children to be neat and orderly and methodical, to make the most of their playthings and whatever material is given them, and this is done by attention to little things.

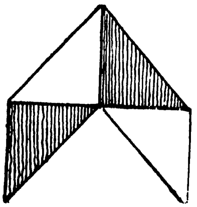
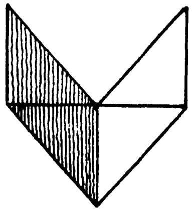


FIG. 22.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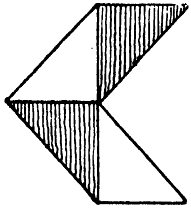


FIG. 24.

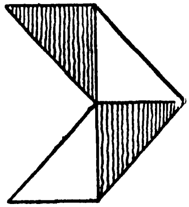


FIG. 25.

EQUILATERAL TRIANGLE.

The next triangle to be given is the equilateral. (Fig. 28.) Very young children cannot easily see how this is obtained from the square ; it is sufficient for them to notice that the sides of the equilateral triangle are each equal to one of the sides of the square. Older children may be shown how the equilateral triangle is obtained, viz., by erecting the triangle on one side of the square. The triangle itself should now be examined. Like the right-angled triangle, it has three sides and three angles, but here all the sides are the same length, and all the angles the same size, all three angles being acute angles. The child should now be encouraged to examine the acute angles of this triangle, and compare them with those of the right-angled triangle, and it will easily discover that they differ in size, and so the lesson can be taught that, whereas right angles are always the same size, this is not necessarily the case with acute angles. Two equilateral triangles, or equal-sided triangles as the child may be allowed to call them, should now be given, and as many different figures made with them as possible.

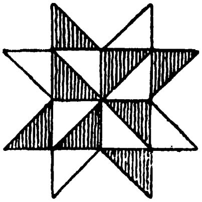


FIG. 26.

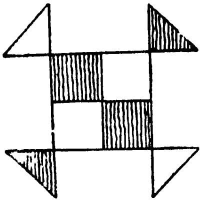
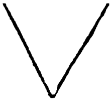


FIG. 27.



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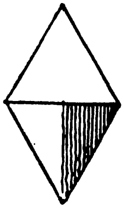


FIG. 29.

What has been done should be stated each time; more and more triangles may be given up to nine, and many objects made and pretty patterns (Figs. 30 and 31). Increased interest is awakened, as I have suggested before, if the child is allowed to perpetuate what it does by coloured chalk drawings or paintings in chequers, and this enables the child, too, to compare its new work with its old, and to note progress in artistic design and in neat work. Children should be taught not to destroy one pattern to make another, but by simple regular changes, such as I described above, page 42, should be led to make fresh and pleasing alterations out of those forms already made. Then squares and the two kinds of triangles, right-angled and equilateral, may be used in conjunction, with most pleasing results (see Figs. 32 and 33).

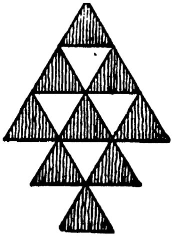


FIG. 30.

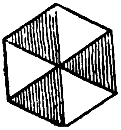


FIG. 31.

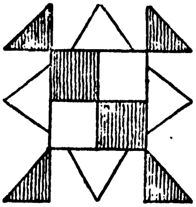


FIG. 32.

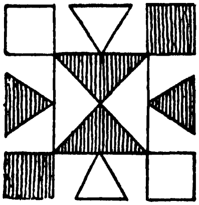


FIG. 33.

The *right-angled scalene triangle.* The very young child will be content with its new plaything, and will not question how it is obtained; but an older child will be deeply interested, and discover two ways by which this triangle can be obtained—one, *a* (Fig. 34), by bisecting the oblong, and the other, *b* (Fig. 35), by bisecting the equilateral triangle; see—

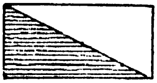


FIG. 34.

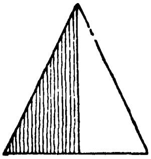


FIG. 35.

In giving this new triangle to the child its attention should first be directed to the triangle itself; the shape is already a familiar friend, but in the *scalene* triangle, the sides are of three different lengths, and the angles of three different sizes, and these are fresh discoveries for the child to make. Facts such as these should on no account be told, but the child should be led to discover them for itself by means of suggestive questions. Our part as parents or educators is to lead our children to compare their new triangles with the others they have had, and to help them to find out alone, as far as possible, the points of likeness and of difference. Gradually the child may be led to discover for itself the relation this scalene triangle bears to the oblong bricks of Gifts IV. and VI., it being half one of the oblong surfaces of the brick, just as the right-angled triangle was half one of the square surfaces of the cube of Gift V. But more, the angles of the scalene triangle should now be examined. One angle is an old friend, viz., the right angle. It was found in one angle of the right-angled triangle, and also in all the four angles of the square and oblong, and so once more the lesson may be enforced that all right angles are alike. The two remaining angles should now be examined, and this will lead the child to notice that both these angles are *smaller* than the right angle, and consequently are *sharp* or *acute* angles; but, whereas in the right-angled triangle the acute angles were the same size, here they differ, one being considerably larger than the other. Should the child experience any difficulty in seeing this from its tablets, the facts can be made quite clear by two pieces of paper—one square and the other oblong. These papers should be folded in halves and cut, and thus the two required triangles—the right-angled and the scalene triangles—can be obtained, and with these paper-triangles the child can easily measure and compare the acute angles.

Children delight in work of this kind. A short time back I watched a class of little boys and girls, between six and seven years of age, at work like this. I was immensely interested to see how eager they were, and how very reluctant to be *told* anything, and to note their delight at each new discovery. Surely such a way of amusing children is a right way. It means being intelligently occupied, makes the children self-active and self-helpful; and this is just what we want to see. But, further, by means of paper scalene triangles, the same size as the wooden triangles, the children may be led to discover that each scalene triangle is really *equal* in size to a square tablet. Exercises such as these are excellent for the child; the persevering attention they require, the comparing and measuring involved —all are excellent training for the mind. As with its other triangles the child was encouraged to combine two in as many different ways as possible, it should do the same with two scalene triangles, always naming and describing each new form produced.

Exercises such as the following may be set:—Combine two scalene triangles: (*a*) with their short sides touching (see Figs. 36, 37, 38);

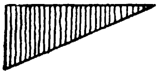


FIG. 36.

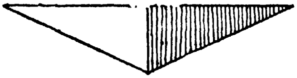


FIG. 37.

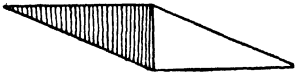


FIG. 38.

(*b*) with their long sides touching (see Figs. 34, 35, and 39, 40);

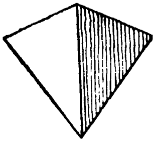


FIG. 39.

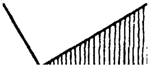


FIG. 40.

(*c*) with their angles touching (Figs. 41, 42).

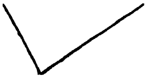


FIG. 41.

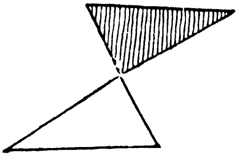


FIG. 42.

Next, four triangles may be given and combined in the same way, and so be made to yield many different and pleasing results (Figs. 43—48).

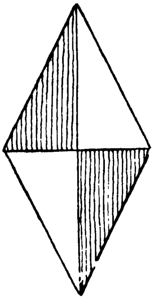


FIG. 43.

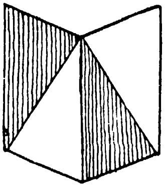


FIG. 44.

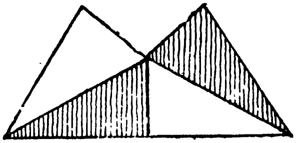


FIG. 45.

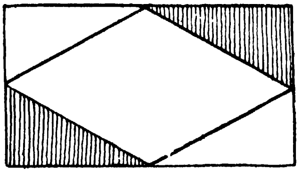


FIG. 46.

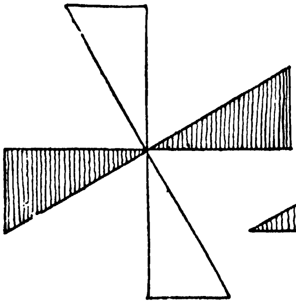


FIG. 47.

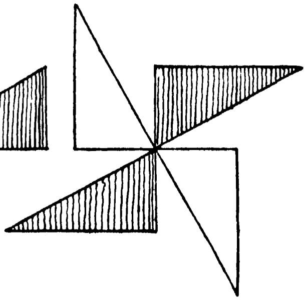


FIG. 48.

Each new form should, as far as possible, be a direct outcome of the preceding forms (Figs. 49, 50).

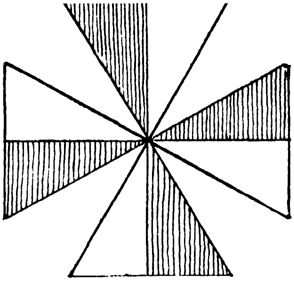


FIG. 49.

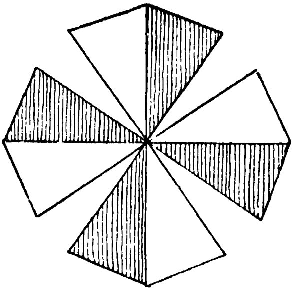


FIG. 50.

Further, 8, 16, and 24 triangles may be given and used in the same way (Figs. 51, 52).

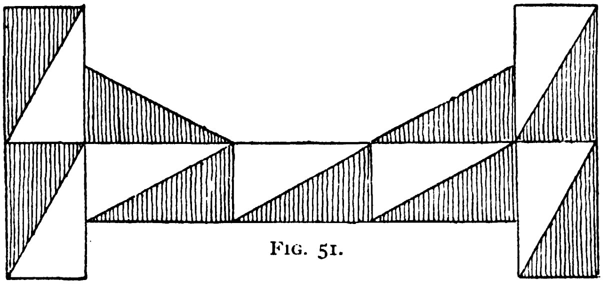


FIG. 51.

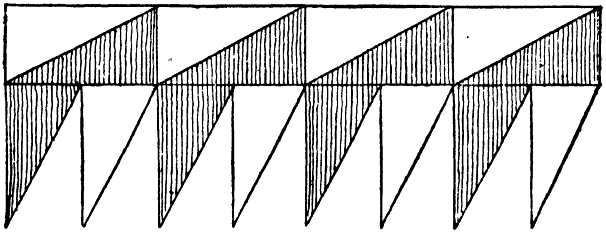


FIG. 52.

What I have said before about perpetuating the designs in coloured chalks and paints holds good here. Scalene triangles should be used in combination with squares and the other triangles, care being always taken to give an even number of each kind of tablet.

THE OBTUSE-ANGLED TRIANGLE.

This is the fourth kind of triangle to be given to the child. It is often difficult to make young children see how this tablet is obtained; it is well not to press the point, but to be content to let the child examine its new tablet freely. Older children can be led to discover that the obtuse-angled triangle is half a rhombus. The rhombus when divided through its blunt angles yields two equilateral triangles (Fig. 53), and when divided through its sharp angles, two obtuse-angled triangles (see Fig. 54).

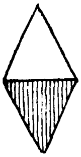


FIG. 53.

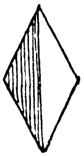


FIG. 54.

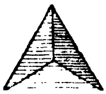


FIG. 55.

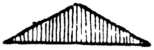


FIG. 56.

The obtuse-angled triangle may also be obtained by trisecting an equilateral triangle (see Fig. 55).

The child should first be led to examine the sides of the triangle. As in the right-angled triangle, we have here two sides of equal length and two acute angles equal in size, and a longer base line opposite the other angle (Fig. 56). Next, attention should be drawn to the large angle, which should be compared to the right angle, and shown to be larger; hence its name—large, blunt, or obtuse angle. This new tablet should now be used as the others were.

Different combinations of two obtuse-angled triangles should be made and described, chalk and paint being again used to perpetuate the designs (Figs. 57—60).

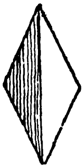


FIG. 57.

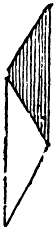


FIG. 58.

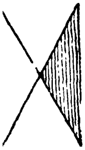


FIG. 59.

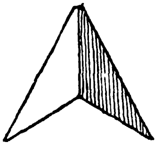


FIG. 60.

Next, combinations of 4, 6, 8, and 9 triangles should be used (see Figs. 61—68).

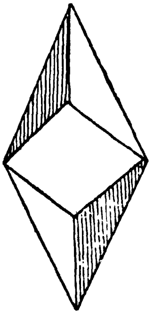


FIG. 61.

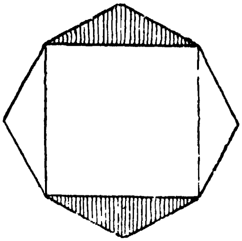


FIG. 62.

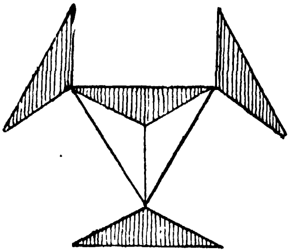


FIG. 63.

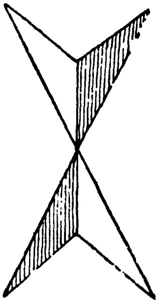


FIG. 64.

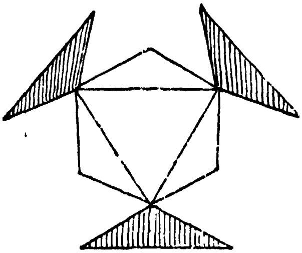


FIG. 65.

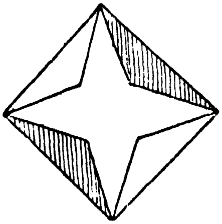


FIG. 66.

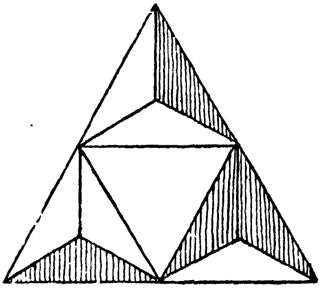


FIG. 67.

Then this triangle should be used with an equal number of square and other triangular tablets, and in this way many artistic forms are obtained (Fig. 69).

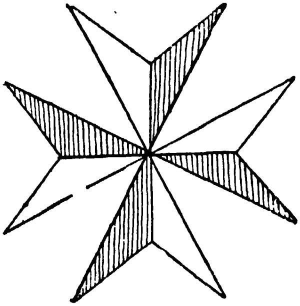


FIG. 68.

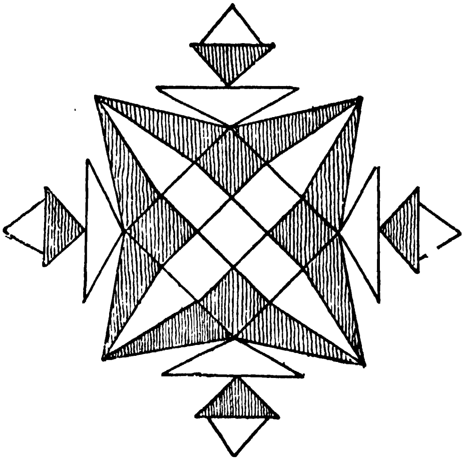


FIG. 69.

Further, these tablets may be used to lay a solid foundation for more definite geometrical teaching, even to demonstrate some of the problems in Euclid, *e.g.*, "That all the angles of a triangle, when added together, are equal to two right angles." Let this be worked out with different triangles.

Older children can also discover the number of degrees in each angle. If they know that there are 360 degrees in a circle, then a right angle, being the fourth part, must measure 90 degrees, the angle of the equilateral triangle 60 degrees, and so on.

Our object in using these tablets is: first, to occupy the child intelligently; next, to call forth its inventive faculty; and, lastly, to make the child feel a pleasure and delight in work, because by work of this kind its mind and hands are both employed at one and the same time; and more, the consciousness and appreciation of what is beautiful is awakened, and thus many wants of the child's nature are satisfied. I cannot end these remarks on tablet-laying without urging my readers to avoid cramming the child with geometrical names and terms. With young children we want to train the eye to see form and symmetry, and not to use hard words; with older children the correct geometrical names can and should be taught, but then we know the name truly represents the form for which it stands, and with which the child is already familiar.

SUGGESTIONS FOR THE YOUNG KINDERGARTEN TEACHER.

I. DEFINITE INSTRUCTION IN FORM.
- *a. The Definition of a Square.* Oblong right-angled triangle, equilateral triangle, right-angled scalene triangle, and obtuse-angled isosceles triangle.
- *b.* Each tablet to be used alone first and then with others, and with their geometrical forms to be made and used as the basis for symmetrical design.
- *c.* Tablets to be used for more advanced geometry. Children to find out facts when arranging the tablets, thus learning through the eye and hand.
- *d.* To be used as a basis for Froebel drawing. (This will be worked out more fully in the chapter on Drawing.)
- *e.* To be used for chalk and colour work, and for definite colour teaching.

II. EDUCATIONAL VALUE.

Powers of accurate observation are trained, reflective and reasoning faculties developed, and the æsthetic sense is awakened by the colour and form teaching.

CHAPTER IX.

PAPER-FOLDING.

PAPER-FOLDING is the second Kindergarten occupation, which comes under the head of "Plane Surfaces." There are three divisions or kinds of paper-folding; they are known as: (1) Object Paper-folding;

(2) Symmetrical Paper-folding; (3) Geometrical Paper-folding. I shall take each kind separately, and explain how it is done.

Before I do this I must speak of the paper used for this occupation; it should be either natural tinted paper or surface paper, *i.e.*, paper coloured on one side only, or white paper. The paper should be cut in the shape of a square, and the best size is the four-inch square. Other shaped papers, such as oblong and triangular, are also used; but the square is the most general shape required.

In teaching paper-folding, the child's attention should from time to time be directed to the geometrical forms folded, the various lines produced, and to the part or fraction which each fold is of the whole; but I think that in this occupation the attention should be principally fixed on the work itself, on the exactness of the folds, the many and varied forms produced, and on the way one form succeeds another—indeed, is often but a development of the preceding folding.

In object paper-folding, as in the two other kinds, each object can be, so to say, put into a class; by that I mean, it and the other objects in the same class all start from one root, or ground form, and thus the first folds are all alike. In teaching paper-folding to quite little children, say from two years old, we must first see that the child clearly understands which is the top, bottom, right and left hand of its square paper, and that the paper always lies on the table straight in front of the child (see Fig. 1). The first exercise is to fold the bottom edge up to the top edge, and this produces an oblong, or, as children delight to call it, a book (see Fig. 2). Exercise II. is to fold the right-hand edge of the paper on to the left hand,

FIG. 1.

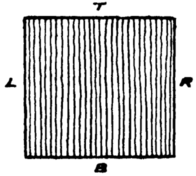


FIG. 2.

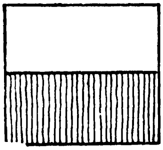


FIG. 3.

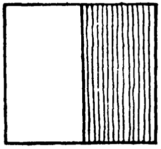
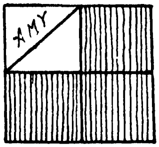


FIG. 4.



which again produces an oblong, only in a different position, and this form the little ones again call their book (Fig. 3). The delight is great if they are allowed to pretend to read in their books and to put their names on them. A third simple exercise is to fold the bottom edge to the top, and then, without unfolding the paper, fold the right-hand edge to the left hand, and thus produce a square, and this, with one corner folded back, makes the pocket-handkerchief, which, when marked with the child's name, is a great delight, and a real possession to the little ones (see Fig. 4).

We gradually come to more and more difficult exercises, each of which has reference to the preceding one. Thus, Exercise III. may be as follows :—The child's attention is drawn to the corners of its square ; it places its paper on one of its corners, and then names the corners, thus : the bottom, top, and right and left-hand corners (Fig. 5), as it did the sides of its square, and then folds, first the bottom corner to the top, which produces the three-cornered or triangular shape, and this fold the little child delights to call its ship. A simple flag made of a short piece of wood and a piece of paper makes the ship more lifelike, and enhances the pleasure this simple object (Fig. 6) gives the child tenfold. So much for the simplest foldings. As I said before, a number of objects can be folded from one ground form, which is obtained thus :—The square of paper is on the table before the child, and it folds first the bottom edge to the top edge, and then unfolds the paper and folds both top and bottom edges down to the horizontal line (Fig. 7) ; this done, the paper is turned over in the same position, and then the right and left-hand edges are folded to the vertical centre line, and thus a small square is produced ; out of this a house, a tray, a seat, and a double boat are folded by pressing out the loose squares into small triangular shapes (see Figs. 8, 9, 10, 11, &c.).

From this same ground form many pretty symmetrical forms can be folded ; but for these it is always best to use surface paper ; the one-coloured side forms a very marked contrast to the white surface, and adds to the prettiness of the foldings.

In order to produce these forms a few rules must be remembered ;

Series I.

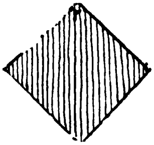


Fig. 5.

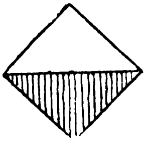


Fig. 6.

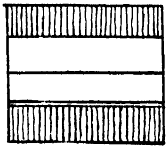


Fig. 7.

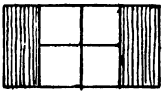


Fig. 8.

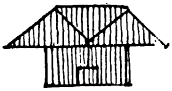


Fig. 9.

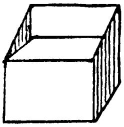


Fig. 10.

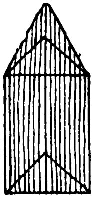


Fig. 11.

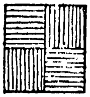


Fig. 12.

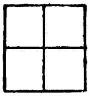


Fig. 13.

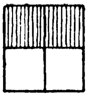


Fig. 14.

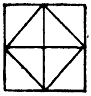


Fig. 15.

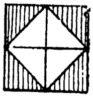


Fig. 16.

first, every ground form has two so-called opposites or contrasts; these may be either in form or colour. With little children contrasts in colour should first be folded; for example, if in the first ground form the colour prevails, in its contrast the white surface should be uppermost, and as in all contrasts they are only so relatively, and are in reality bound together by links or transition forms, so the next step is to furnish these links, and this is done by folding a form like the first ground form, half in colour and half in white; from these three ground forms (see Figs. 12, 13, and 14) many different patterns (developments, as they are called) may be folded; the simplest is to fold back all the four corners of the small loose squares, and then to fold them back and tuck them in (see Figs. 15 and 16).

A great variety of patterns may thus be produced by oblique folds, and by increasing the number of times each square flap is folded. The point here is to have the work perfectly and exactly done, and then to encourage the child to invent as many new designs for itself as it can; the more closely the rule of folding a form and then its opposite is adhered to, the better it is, and the more valuable is the paper-folding as a means of educational training to the child. The children should be encouraged to put their foldings to some practical use: pasted on to Oxford frames made out of cardboard they form very pretty frames to pictures; then as ornamentations to box-covers and paper cases they are most effective. Children dearly love to see any work they do made of real use; this desire to be useful should be fostered in every way—it is a great inducement to persevering effort, and as such should be encouraged to the utmost.

SERIES II.

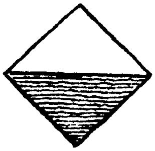


FIG. 1.

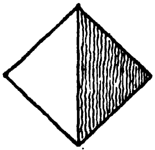


FIG. 2.

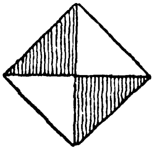


FIG. 3.

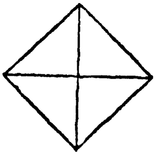


FIG. 4.

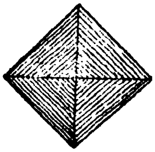
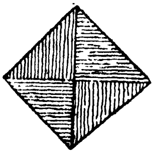


FIG. 5.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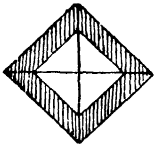
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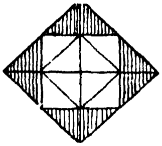


FIG. 8.

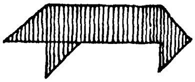


FIG. 9.

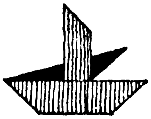


FIG. 10.

II.—A second course of folding is as follows:—The child again places its square on one of its corners in front of it, and folds the bottom corner to the top corner, being most careful to be exact; then unfolds its paper and folds from the right-hand to the left-hand corner, again unfolds its paper and folds all the four corners to the centre (see Series II., Figs. 1, 2, 3). Then this form may be taken as a new ground form, its contrast and links, &c., found, and these developed much in the same way as was done in Series I. (see Figs. 4, 5, 6, 7, 8).

III.—A third ground form can be folded out of these two ground forms by folding all the corners a second time to the centre and then treating this new folding in the same way as was done with ground forms I. and II. When once we have ascertained that the child understands the principle on which the various foldings can be produced, it is best to leave it free to fold as it will, mothers or educators merely helping by occasional suggestions and a helping hand when it is really needed.

Out of this last ground form many objects can be folded, and all the squares may be pressed open and a pretty salt-cellar produced, or the corners may be folded down as in Fig. 9, and the pig comes forth, which object is much appreciated by the small folk ; and again the corners may be pressed out as in Fig. 10, and the boat with a sail is the result.

There are many more ground forms all folded from the first three described, and developed on the same plan, which, when neatly and artistically done, are very effective. I have only been able briefly to indicate the way the paper-folding should be used, space will not allow me to dwell more in detail on this part of paper-folding. I hope I have said enough to show what endless capabilities there are for developing this occupation. Paper-folding is an excellent training in neatness and exactness ; it trains the eye to see forms clearly, and develops deftness of fingers, and helps both boys and girls to use their hands cleverly and well—no mean gain, I assure you, in after life.

GEOMETRICAL PAPER-FOLDINGS.

This is the third kind of paper-folding used in the Kindergarten ; it is more difficult than the symmetrical and object paper-folding, and is consequently an occupation more suited to older children.

The object of this paper-folding is to show how the different geometrical forms with angles of different sizes may be obtained from a square of paper by folding the paper in a variety of ways. I shall give you a few examples of what I mean, and then leave you to discover others for yourselves. The more we encourage our children to find out things alone, the better it is for them in every way ; only when the child has folded a new figure, we should do our best to help him to describe his folding in his own way, and be content gradually to fix the proper geometrical term to each figure. I have impressed this on you before, and I do so again because it is so important to make sure that the children *understand* what they do. We are often told that an objection to the Kindergarten occupations is that they are all based on geometry, and that this is a study unadapted to the tender brains of little children. The objection holds good if the occupations are made the means of teaching little children to talk glibly about rhombs and angles,

&c., but it is invalid if the occupations are made the means of teaching the little ones to notice form and its many varieties, and exactly and clearly to state what they see, and this is the way Froebel meant his Kindergarten occupations to be used.

But to return to the geometrical paper-folding. The simplest exercises are to fold the oblong and the triangle out of the square. This is done as follows:—The square of paper is placed on its side before the child and folded horizontally, to be folded from the bottom to the top in half, with the result, an oblong in a horizontal position; or, it is folded from left to right, or from right to left, and the oblong is again produced, only this time in a vertical position (see Figs. 11, 12, 13). It is well to let the children paste their foldings in a book, a wide margin being ruled in which a short description of the figure is written. The next exercise is to fold the square paper in half, obliquely or angle to angle, and to do this in as many different ways as possible: the result each time is a right-angled triangle half the size of the square. Stress should be laid here on the angles of the triangles, the position of the right angle should be carefully noticed, and the sizes of the acute angles. In this way the child can receive its first simple lessons in measuring angles and calculating the number of degrees in each. But more. Let the child fold vertical, horizontal, and oblique lines on its square of paper, and then fold the bottom and right-hand sides of the paper to the diagonal lines, as in Fig. 14, and the result is the kite form or trapezium, an irregular four-sided figure (Fig. 15), and then by folding, as was done for Fig. 15, and also folding the remaining two sides to the diagonal, the *rhombus* is obtained (Fig. 16), which is a regular four-sided figure with two acute and two obtuse angles. The *rhomboid* is obtained by folding vertical, horizontal, and oblique lines on the square of paper and

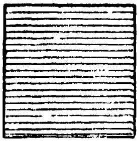


FIG. 11.

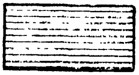


FIG. 12.

FIG. 13.

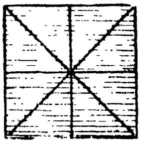


FIG. 14.

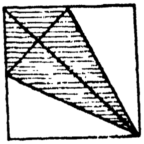


FIG. 15.

then folding the bottom and top sides of the paper to the same diagonal line (Fig. 17). The rhomboid is also a regular four-sided figure with two acute and two obtuse angles, but it differs from the rhombus in that only its opposite sides are equal. The different *triangles* can be folded from the square of paper in the following way :—

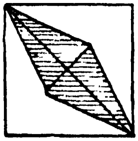


FIG. 16.

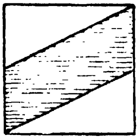


FIG. 17.

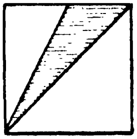


FIG. 18.

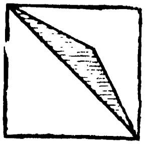


FIG. 19.

The right-angled triangle I have shown you how to fold already. For the equilateral triangle, first fold the vertical, horizontal, and oblique lines, and then fold the top and right-hand sides of the paper to the diagonal line and the remaining side over, and we shall have an equilaterial triangle.

The scalene triangle can be obtained by folding the kite form and then folding it in half (Fig. 18), and the obtuse-angled triangle is also got by folding it in half (Fig. 19). All the geometrical figures, the pentagon (five-sided) figure, hexagon (six-sided) figure, and the octagon (eight-sided) figure, can be folded from the square. I hope I have said enough to make my readers eager to teach the little ones how to find out the way to fold these other forms for themselves.

SUGGESTIONS FOR KINDERGARTEN TEACHERS : PAPER-FOLDING.

I. This occupation develops the eyes and hands, and is helpful as a form of manual training.

Rules to enforce.

1. Train the child to use both hands equally.
2. Exact perfect work, and it will be produced if the exercises are graduated in difficulty.

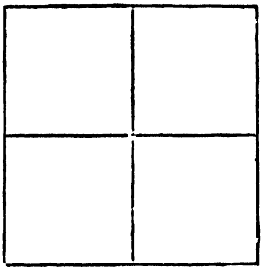
3. Take object paper-folding and symmetrical paper-folding together; teach the ground-forms and links, and then have these developed and objects folded from each ground-form.
4. Show the plan on which the folding is done, and then leave the children free to carry it out and invent new forms for themselves.
5. Put the folding to some use.
6. Do not attempt geometrical paper-folding till about the seventh year, and then have descriptions written of the work done, but let these descriptions be in the children's own words, and gradually get the correct geometrical terms used.
7. Teach the children to prepare their own materials — old letters, circulars, leaves of exercise-books, should all be used for making squares, and the waste strips turned to account for making paper-spills, either rolled or folded, or made into little screws for filling pillows and cushions, drawing them across one blade of a pair of scissors to make them curl up.
8. White paper may be used for the symmetrical forms, and the folds chalked or painted, with artistic effect.
9. The geometrical forms may be unfolded and the figures formed on the papers painted or chalked in, with great advantage.

CHAPTER X.

PAPER-CUTTING.

PAPER-CUTTING is the third occupation which comes under the head of plane surfaces. It is a favourite with the little ones, for they dearly love to use scissors, paste, and brush. This is the first occupation for which the child has to use tools, so it may be said to mark a period of the child's development. Paper-cutting, as used in the Kindergarten, differs from the ordinary cutting out of pictures, or cutting up of paper into figures and objects. In cutting out pictures, and cutting up paper for objects or figures, there is a good deal of waste of material. This is not the case with the Kindergarten paper-cutting, where a square of paper is given to be folded and cut up in certain ways, every tiny atom of the paper having its place to fill to complete and perfect the new design. Froebel looked on this as important; he saw, in thus teaching the child to use every bit of its cut-up square of paper, a means of training him to make the most of material, and to waste nothing, as well as an educational power to develop in the child artistic taste and invention, and skill and deftness of fingers, and he was right here: it is in the way we amuse and occupy our children that we are training them in good habits, or the reverse, and, therefore, we cannot be too careful about attending to these so-called trifles.

SERIES I.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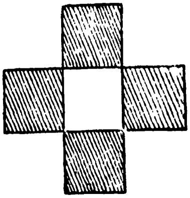
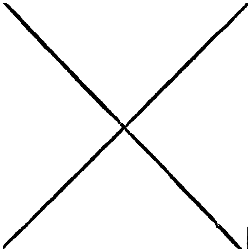
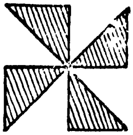

1b.

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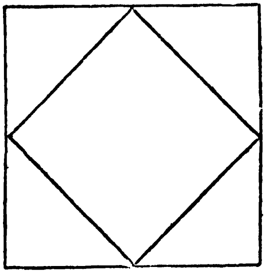
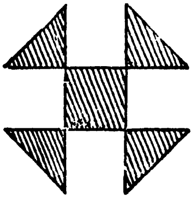

3a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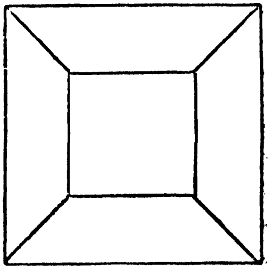
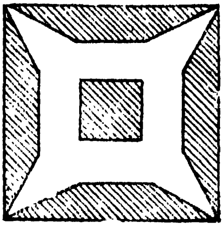
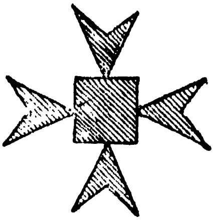
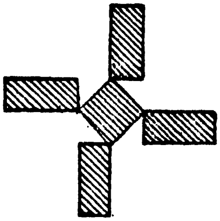
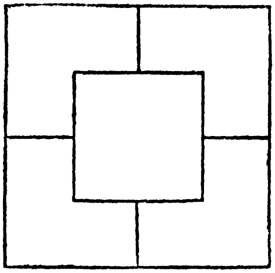
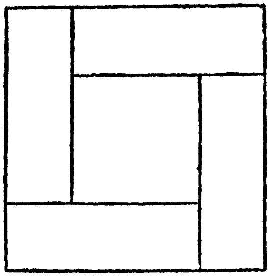

4a.


4*b*.


5*b*.


6*b*.


5*a*.

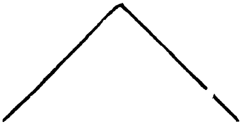

6*a*.

The materials required for this occupation are (1) a pair of scissors (the cheap blunt-pointed scissors do very well, and are safe for quite young children to use); (2) a paste-brush and some starch paste; (3) a book, or clean square sheet of paper, with just the centre of the square marked, and on to which the cut papers are to be pasted; and (4) squares of neutral-tinted paper, such as are sold in sixpenny packets at any Kindergarten depôt; the four-inch square is the one most generally used. There are two courses of paper-cutting used in the Kindergarten. In the first the child folds up its square of paper according to given directions, and then unfolds it and cuts along the creased lines, using each piece of paper thus cut off to form a new design. This course we will call Series I. Figs. 1 to 6, *a* and *b*: *a*, the papers creased for cutting; *b*, the designs made from the paper when cut up. But in this occupation, as in others which we have talked about, it is well to encourage the child to work freely, and find out fresh folds and fresh designs for himself, care being taken that the child works neatly and methodically.

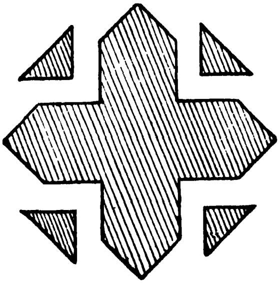
In the second course of paper cutting, the square of paper is folded into a right-angled triangle, and then folded again into a smaller right-angled triangle ; this gives us a triangle with one side closed and the other open ; we must then hold the paper where the corners are all united, and fold one of the other corners to the right, and the other to the left, which will again give us a right-angled triangle ; holding the triangle again by the closed corner, we have to fold the upper triangle in a variety of ways, and then cut along the lines through all the whole thickness of the paper. This done, we must unfold the parts cut, when we shall obtain many pleasing and varied results (see Series II. Figs. 7*a*, *b*, and 8*a*, *b*).

The cut-out patterns, when neatly cut and pasted, form very pretty covers to blotting-books and paper-cases, and in this way the children's work can be turned to some use.

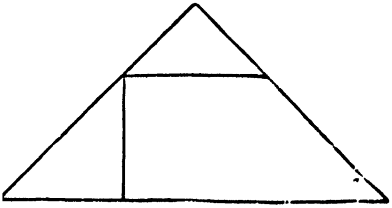
SERIES II.



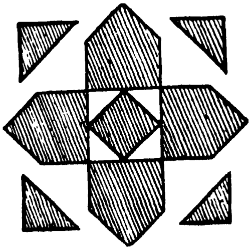
7*a*.



7*b*.

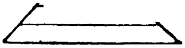


8*a*.

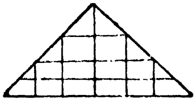


8*b*.

In cutting Series II. forms, the triangle needs to be chequered, which is done by folding the apex of the triangle down to the base line, unfold, then fold the apex to the centre line, unfold, and then fold the centre line to the base line ; result, Fig. 7.



7.



8.

Then fold the triangle vertically in the same way, and we get our triangle folded in chequers, which will serve as foundation lines for the cutting (Fig. 8). Two sets of forms are obtained, depending upon the side we cut ; I mean whether the folded or open side is cut. The cutting should be on a plan, say, first to cut the paper horizontally, then vertically, then vertically and horizontally, and then obliquely.

OBJECT PAPER-CUTTING.

Cutting objects from a square of paper is also a favourite occupation. The square or oblong paper is folded in half, and then leaves, fruits, flowers, and objects, such as houses, ladders, flower-pots, &c., are cut. The outline from which the form is cut must be carefully preserved to avoid all snipping and wasted cutting. To cut the outlines of flowers, fruits, and leaves is excellent training in observation, and in being exact and accurate.

PAPER-FOLDING AND PAPER-CUTTING.

Paper-folding and paper-cutting combined is another very effective occupation, and follows naturally on those just treated. Here a circle of paper is taken—tinted paper is best to use. The circle is folded in half, then in quarters and eighths, and then cuts are made on the creases made, and the papers are folded in symmetrical designs.

CHALK WORK AND COLOURING.

Another occupation which comes under the *plane* surfaces is chalk and colour work. The first exercises are closely connected with the elementary drawings, of which we shall speak later. For the chalk work the materials required are chequered paper—checks ruled ¼ inch—and a box of crayons. The first exercise is to chalk in alternate squares, using the primary colours, care being taken to draw the lines either vertically, horizontally, or obliquely. Then to do exercises in oblongs, triangles, or other geometrical figures; also objects and the alphabet and figures may be done in chalk work. Following closely upon this work we have *brush* or *colour work.* The exercises are of two kinds: (1) those done in chequers like the chalk work, only paint is used instead of coloured crayons; (2) a series of exercises done with the paint-brush used as a pencil for drawing; unglazed writing-paper or cartridge paper is used. Designs are made with blobs of paint, dots and lines, used singly and then in combinations, and out of these blobs ▾, dots ●, and lines ▬, many designs are made. Then flat washes are used, and out of these animals, birds, insects, fruit, flowers, and objects are painted.

The idea of the work is that the paint brush alone should be used, and the children encouraged in free designs, and in illustrating stories read or heard. These occupations are a delightful source of interest to the child, and their educational value is immense as regards: (1) The colour and form training they give. (2) The accurate and neat work involved, for a paint mark cannot be effaced like a pencil mark. (3) The scope they afford for invention and original work.

The course should be progressive, its order indicated only, to be worked out freely by the children. The colours should be used in a definite order—the *primary*, red, yellow, blue; and the *secondary*, orange, purple, green. The way the secondary colours are obtained from the primary should be shown—*e.g.*, orange, by mixing red and yellow; green, by mixing blue and yellow; and purple, by mixing red and blue, &c. Thus, much colour teaching may be imparted.

PAPER-PLAITING OR MAT-WEAVING.

Paper-plaiting or mat-weaving is another of the Kindergarten occupations which comes partly under the head of plane surfaces and partly under that of lines. Here, again, the child needs a tool to work with, and for this reason the occupation, like paper-cutting, involves some slight skill in using the hands. The materials required are most simple, they are:—(1) A mat frame. (2) A number of strips of paper cut the same width as the strips in the mat. (3) A plaiting needle, either wooden or steel.

Messrs. Hamley Bros., of 64, Regent Street, W., have a large assortment of mat frames of different shapes and sizes, and at very low prices; but the mat frames and strips can easily be cut at home, and it is well to make the children prepare their own materials whenever they can, as this teaches them economy, and to make the most of whatever materials they have. I will just say how mat frames and strips can be made, as all may not know how they are cut. Take an oblong or square piece of paper—white glazed paper or fairly thick notepaper—rule an inch margin all round, and then fold the paper in half longways, and cut strips as far as the marginal line, ½, or ¼, or ⅛ of an inch in width (see Figs. 9 and 10); when the paper is unfolded the mat frame is ready for use. The strips are cut from an oblong paper, the same size as the mat, and are cut through, except at one end, and should be cut the same width as those of the mat frame; it is well to have these of some coloured paper; blending two shades of the same

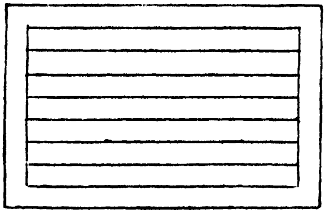


FIG. 9.

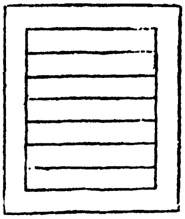


FIG. 10.

colour, or using two different colours together, adds to the effect. The patterns that can be made by simply passing the needle, to which one of the strips is threaded, alternately under and over one or more of the strips in the mat frame, are innumerable, and leave ample scope for ingenuity and inventive resource on the part of the child or parent. By this occupation the child's hands and fingers are made very subtle and adroit, its eye for form is trained, and it learns to count and to analyse simple numbers without any strain, or even being aware that it is thus learning; besides this, the child is exercised in being patient and persevering. These mats, when finished and pasted on to cartridge paper or thin cardboard, make very pretty baskets or trays and needlework covers, and in this way even quite young children can, almost unaided, make a present to give to mother or nurse, a very real pleasure to the little ones, as all are aware who know anything of children. Strips can be plaited together, and in this way book-markers can be made. I affix a simple pattern for mat-plaiting (Fig. 11).

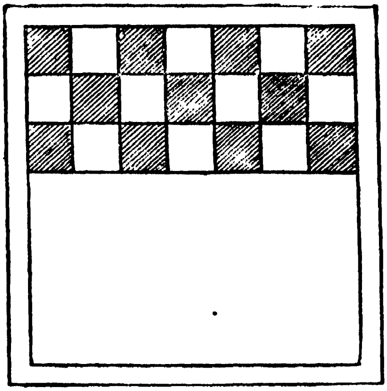


FIG. 11.

ADDITIONAL NOTES ON MAT-PLAITING FOR YOUNG KINDERGARTEN TEACHERS.

This is an occupation suitable for quite young children. The work can be graduated from very simple exercises suited for children from three years old up to work which will tax even an adult.

1. The first mats should be cut out of glazed calico or brown paper, and strips of white or coloured paper should be used, the weaving done with the fingers without any mat-needles. The aim here is to teach the up and down movement.

2. The next mats should be thin cardboard ones, white or tinted, worked with cardboard strips of one or more colours.

3. Then should follow square or oblong paper mats, the strips all to be cut the same width and the effect produced by weaving strips of different widths or colours.

4. Now should follow what is generally known as *combination-mats;* that is, mats cut in different width strips and worked with strips to correspond, only one strip being taken each time. The effect is produced by the varying widths used.

5. Upon this course could follow one on *numbers,* the pattern being produced by taking up different numbers, from 1 to 5, as required, or by pushing the pattern to the right or left, making what is known as *steps.*

6. Lastly could come *cross-weaving,* the object of which is to lead up to cane-weaving and sachet work.

CROSS-WEAVING.

Here alternate strips should be cut out from the mat-frames and the weaving done crossways, the strips crossing in the spaces. When two or more colours are used the effect is very artistic. The strips are kept in their places by being pasted to the mat-frames.

PART III

LINES.

CHAPTER XI

WE are now going to consider together those occupations which belong to the group of lines. They are: (1) the Jointed Lath; (2) the Free Lath for plaiting; (3) Paper-twisting; (4) Stick-laying and Ring-laying; (5) Drawing; (6) Sewing; (7) Thread-laying.

From what has already been written on the subject of the Kindergarten gifts and occupations, you will remember that these educational toys follow each other in a definite order; solids are followed by plane surfaces, and the plane surfaces by lines: thus we see a gradual transition from the concrete to the abstract, and if we look a little more closely at the way the occupations come, we shall see each group is, so to say, connected; the transition from the one to the other is bridged over by occupations which clearly show the connection between the old and the new occupation: thus the first occupation in this new group is the jointed lath or the embodied edge of one surface of the plane surface. The laths used in the Kindergarten are of two kinds: (1) connected lath or jointed lath; (2) free lath used for plaiting or interlacing.

THE JOINTED LATH.

This toy consists of ten laths, each four inches long, fastened together by small rivets. The toy can be folded and unfolded at will. In appearance it is much like a carpenter's rule on a small scale.

Froebel meant this lath to be used with older children, as a means to impress geometrical facts, and to show the connection between the different geometrical figures and how they are developed from each other's use. The child, when playing with the jointed lath, holds it in one hand and with the other pushes the parts into the required position. It is well to make the child use both its hands equally, sometimes holding the lath in one hand and sometimes in the other.

When the child has played freely with this toy, it is a good plan to set him some figure or object to make, and then encourage him to say what he has made, *e.g.*, Make a triangle and a square, and tell me what kind of angles each figure has (Figs. 4 and 5).

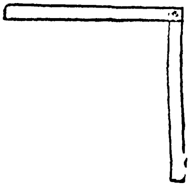
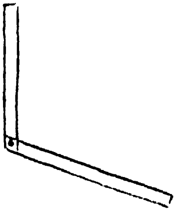


FIG. 1.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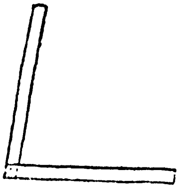
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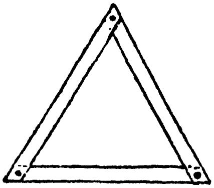
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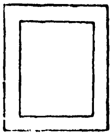


FIG. 5.

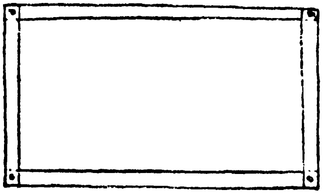


FIG. 6.

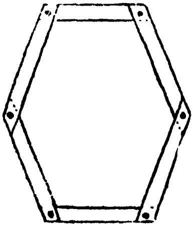


FIG. 7.

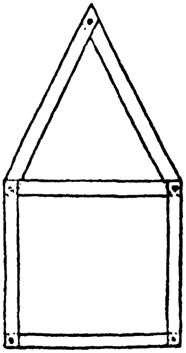


FIG. 8.

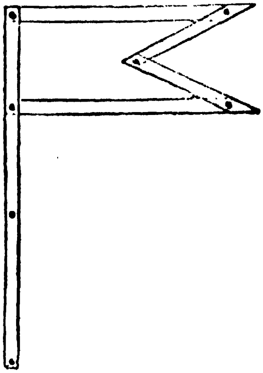


FIG. 9.

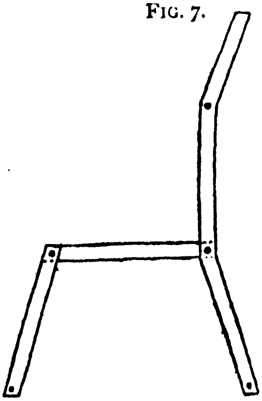


FIG. 10.

Figs. 1 to 7 show a few forms which can be made.

Figs. 8, 9, and 10 show objects, a house, a flag, and a chair.

The jointed lath is a favourite toy with older children, and is especially useful in teaching the elements of geometry. Teachers know only too well what constant need there is of repetition before facts are really remembered; and more, to ensure that the knowledge is not mechanical, it is essential to let the recapitulation be varied in its form, and it is just here that the jointed lath is so valuable.

Again, to ensure accurate knowledge, it is important to show the connection between the forms. This can be well done with the jointed lath, when we find that a simple movement will change a right angle into an obtuse or acute angle, a square into a rhombus, and an oblong into a rhomboid, or, by the addition of a part of the lath, a square can be turned into a pentagon, and that again into a hexagon.

SUGGESTIONS TO THE YOUNG KINDERGARTEN TEACHER.

1. Use the jointed lath for examination work in the form-teaching which has been given.
2. Leave the child free to make discoveries for itself about forms and their connection with each other.
3. Encourage the child to express in its own words what it makes, and the way that form appears.

LATH-PLAITING OR INTERLACING.

Lath-plaiting or interlacing is no new occupation. From the earliest times children have delighted in weaving grasses and rushes into mats and baskets, and in twisting twigs and papers into picture-frames and other objects. Froebel saw the pleasure occupation of this kind was to children, and so he provided them with material in his lath, which could be always to hand, and would form a ceaseless occupation and amusement to the little ones, whilst in the hands of a skilful educator this simple amusement could be made the means of imparting much useful information, training the child to use its hands deftly, to notice forms very exactly, to work neatly and accurately, and to be persevering and patient, willing to take real trouble to make his work perfect, since on the *perfect* way in which the work is done, more than on the difficulty and greatness of the effort, depend the beauty and symmetry of the completed object.

The laths used in the Kindergarten are thin splints of wood four or ten inches in length ; these are either white or coloured. The coloured laths

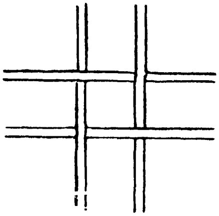


FIG. 11.

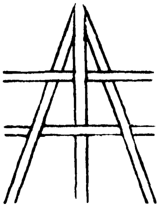


FIG. 12

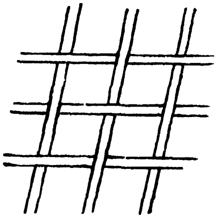


FIG. 13.

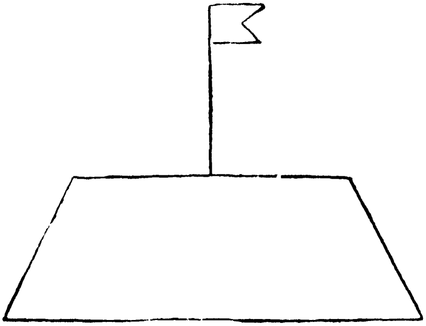


FIG. 15.

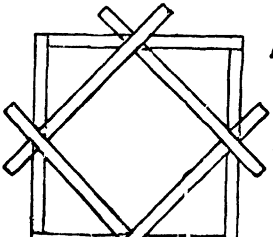


FIG. 14.

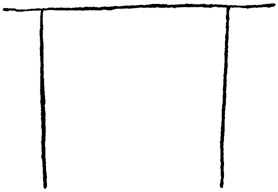


FIG. 16.

are much appreciated by the children ; they love to blend and contrast colours in their forms, and I am much in favour of coloured laths, as colour can be taught by them as well as form.

The interlacing is done by placing the laths alternately over and under each other. Four laths is the lowest number which can be used in this way to produce the *window*, one of the simplest objects. By adding one lath each time great variety of forms can be obtained (see Figs. 11 to 14). With very young children, whose fingers are too clumsy to plait the laths, shorter laths can be used—four inches long—and the outlines of figures and objects laid (Figs. 15 and 16). This way of introducing the lath is good, as the little ones are soon eager to have the longer laths, as then their forms can be lifted up and kept, which is not the case when the outline merely is laid.

BASKET-WORK.

Lath-interlacing leads on naturally to basket and mat-weaving, with real rushes and canes, and this is a most practical and useful occupation, for boys especially. Messrs. Hamley Bros., of 64, Regent Street, sell the canes for this work, ready prepared in bundles, 1s. 6d. each, and also a little book of illustrations at 6d., which any parents would find all that was necessary to enable their children to make a large variety of most useful and ornamental things.

PAPER-TWISTING.

This occupation follows very closely on the lath-plaiting. Like the jointed lath, the work is more suited for older children. As a means of impressing geometrical forms it is most valuable, and also as indicating a simple way of introducing the child into the mysteries of angles and their sizes.

The material used is a long strip of white or coloured paper, an inch wide and folded in three. With the folded paper the child twists the different geometrical figures: care and accuracy are needed to get the angles the correct size, and the perfection of each form depends upon this.

Objects cannot easily be produced, but most artistic and elaborate patterns can be made, which, when neatly pasted, form very pretty designs for blotting-case covers, picture-frames, and boxes. Combining two or more different geometrical figures, such as squares, triangles, and oblongs, &c., offers fresh opportunity for new artistic designs.

STICK-LAYING.

All who know anything about little children must have noticed how intensely fond they are of drawing; how eager are the solicitations for paper and pencil, and yet how disappointing are the results. The baby fingers are often too weak to guide the pencil, and shaky, meaningless lines alone are the results of the little ones' efforts. Froebel, watching children as closely as he did, saw, in this longing, a power for calling forth self-activity, a means, if fostered and developed, of helping the child to express itself; so he arranged one of his occupations to be a stepping-stone to drawing, a kind of concrete drawing, which should be to the tiny child all that drawing is to older people. This occupation is *stick-laying*. Sticks of varying lengths and of different colours, or white, are given to the little one, and with these sticks it is led to make outline pictures of objects it sees around, to make stick picture-representations of stories it has heard and objects it has seen, which it wishes to recall to itself or to be able to show to mother or teacher. The sticks most generally used are square or round sticks, white or coloured. They are sold in bundles for a few pence at every Kindergarten depôt, in lengths varying from one to ten and twelve inches. The square sticks are the most satisfactory, as the round ones are more difficult to keep in their places. The child should only have a few sticks given it at a time, and be encouraged to place them in as many different ways as possible, and to talk freely about each object or figure made. It is most important always to let the child talk freely about his work; word and deed must ever accompany each other, as in this way what the child does becomes real to it.

Figs. 1 to 7 give a few specimens of objects that can be made with a small number of sticks. The number is infinite, and the more the child is left free to invent and discover fresh objects for itself the better. In stick-laying, as in building with the cubes, it is well to make the child desist from the first from destroying any object that has been made in order to make a fresh one, but rather, by slight alterations in the positions of the sticks, to change one form into another. When the children are rather older, it is a good plan to let them draw in chequered drawing-books the objects and patterns they have laid, as in this way they see the progress they have made, and children dearly love to reproduce the same things in as many different ways as possible. I shall speak more at large on this point, however, in my paper on Kindergarten drawing.

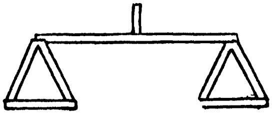


FIG. 1.—SCALES.

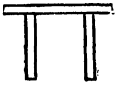


FIG. 2.—TABLE.

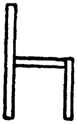


FIG. 3.—CHAIR.

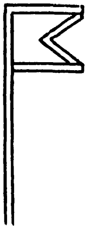


FIG. 4.—FLAG.

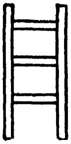


FIG. 5—LADDER.

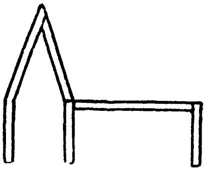


FIG. 6. CHURCH.

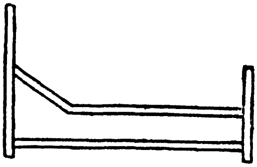


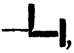
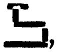
FIG. 7.—BEDSTEAD.

Froebel also intended these sticks to be used for giving a child its first lessons in form ; all the different kinds of lines—the vertical, horizontal, oblique, parallel, &c.—can be taught, as well as the different angles and geometrical figures. Children dearly love to lay their sticks in as many different ways as possible, and if only they are cheerfully and pleasantly led on to it, they acquire all the elements in a most easy way. Here, again, I must urge a word of caution against using hard geometrical terms; let the children use their own definitions, provided only they are correct ones, and the geometrical definitions will come naturally enough later on.

Stick-laying is an invaluable means for *form* teaching. The first lessons could be as follows:—Give a stick to each child in a class and let it be freely examined— its length, substance, &c., will be easily discovered through the feel. Then the little one will try and make its new friend stand up, lie down, and possibly, aye, probably, the result of the investigations will be a broken stick, but no matter; many facts will have been learnt, and the little one is ready to learn fresh facts. Then the small pupil should be encouraged to say what its one stick in the different positions represents; balanced by the fingers the child's lively imagination will see a pencil, umbrella, coachman's whip, &c.; lying on the table, it will represent a tree felled down, a path, &c.

Then *two sticks* should be given and a similar plan pursued, parallel lines, or railway lines as they will be first called, will be discovered. Touching each other, the two sticks will represent a roof of a house **Λ** the letter **T**, a whip **Λ**, &c.

As each additional stick is given, fresh discoveries are made. In systematised play of this kind power is called forth, definite instruction given, and the child led to think and reason.

The sticks may also be used for teaching the alphabet. Soaked in water, they can be bent to represent curved lines, thus:—**B U R**, &c. The Roman and Arabic numbers can also be taught—, , **V**, **X**, &c., and thus figures taught side by side with the number-lessons given.

Thus the sticks may also be used for giving a child the first idea of *number*. The idea of number in the abstract is beyond a young child, but if concretely presented is a delightful mental exercise. Let a child handle each unit, see each number concretely before him, and he will learn quickly enough to count, subtract, multiply, and divide, and in play like this all the elements of arithmetic may be taught.

Exercises such as the following may be set the child:—

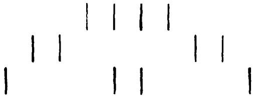
Give four or six sticks, and let the little one arrange these singly, and then say the number of ones there are in four or six. Then arrange his sticks in bundles of two or three ; again say how many twos or threes there are in four or six.

Multiplication may be taught similarly, and also division.

It is well to connect these little arithmetic stick lessons with slate arithmetic, teaching the child to make figure-pictures on its slate of the numbers laid with its sticks, and also to make figure-pictures of the little sums it works with its sticks ; and it is an excellent practice to have each of these little exercises worked mentally, too. Children thus taught appear to make somewhat small and slow progress at first, but a little patience and one is astonished at the rapid progress made later, and the clear and decided way children work sums afterwards.

The following are a few exercises to illustrate what has been just said :-

Sticks. *Slate-work.*



4

2 and 2 = 4

$1 + 2 + 1 = 4$

Time and space will only permit of my thus briefly indicating the many ways in which the sticks may be used. In the hands of a thoughtful parent or teacher they are invaluable as a means of ceaseless amusement and instruction ; no better plaything can be given to our little ones ; the cost is a mere trifle, and yet the source of interest is untold and unlimited. I can only urge upon every mother to provide herself with some bundles of sticks as soon as possible if she does not already possess them.

SUGGESTIONS TO THE YOUNG KINDERGARTEN TEACHER ON STICK-LAYING.

Order for stick-laying lessons.

I. NUMBER TEACHING.

- *a.* Counting lessons : separate the units and count by touch and sight, and then by sight alone.
- *b.* Analysis of number : the power or properties of each number, *e.g.*, number of 4 and 2 in 8, &c., half of 6, 4, 2, &c.

- *c.* Teach first four rules, and side by side with the stick work use slates and figure work.
- *d.* Teach square numbers and fractional parts by breaking up or marking sticks.

II. FORM-TEACHING.

- *a.* Different positions in which one or more sticks can be placed and results obtained.
- *b.* Geometrical forms and objects to be made with two or more sticks.
- *c.* Show that objects such as houses, walls, &c., as well as symmetrical patterns have geometrical foundations, and that their symmetry depends to a large extent on this.
- *d.* Show the development of geometrical forms from one another.
- *e.* Illustrate stories, games, and poetry lessons by these means.

III. EDUCATIONAL VALUE.

Play with sticks absorbs and interests, and so leads to a habit of *work* and reproductive activity.

To a young child stick-laying (the first form of drawing) is a kind of concrete language, a means of expressing thought.

Stick-work is real gymnastic training to the hand and eye.

RING-LAYING.

This occupation is closely connected with stick-laying, indeed it may be considered a continuation or sequel to it.

The materials used are small metal rings, white or black circles, and half circles; with these the child lays patterns. The curved line greatly adds to the beauty of the patterns; its grace and elegance exercise a kind of fascination over the little ones, calling forth the æsthetic side of the child's nature, and delighting by the varied beauty of form and perfection of symmetry which it is impossible to get without the curved line.

The rings may also be used with sticks, and in this way pictures of stick and ring objects may be made; but I always think adding sticks spoils the beauty of the forms made with the rings alone.

The ring patterns, like those made with sticks, should not be destroyed to make new ones, but altered by slight changes in the position of the rings to make fresh designs; and it is well to let the children draw the patterns they have made as soon as they can.

Figs. 8 to 12 show a few ring designs.

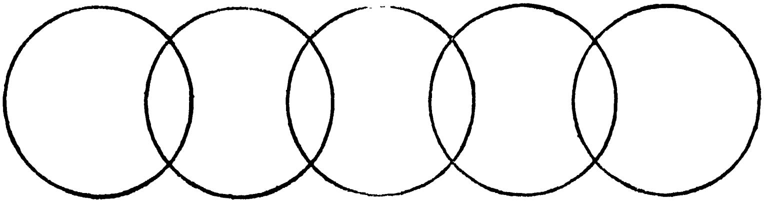


FIG. 8.

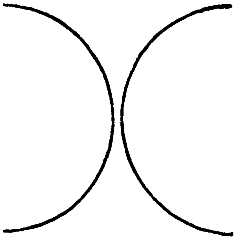


FIG. 9.

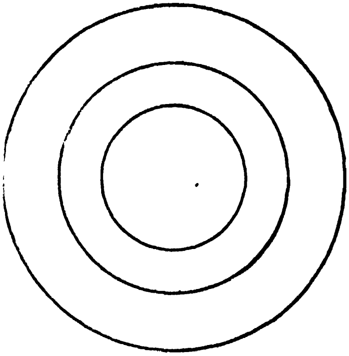


FIG. 10.

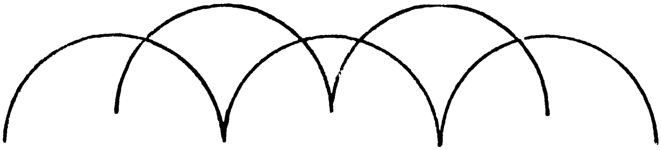


FIG. 11.

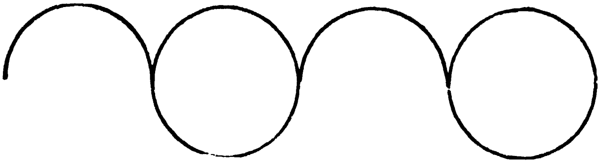


FIG. 12.

Much useful information about metals may be given with these rings; a real fairy tale the little ring will unfold if made to tell its life history. The information should not all be poured forth at one time, but be given gradually as occasion demands and the child desires.

Then with older children it is well to lead them to see how the circle is obtained. It is the embodied edge of a cylinder, the periphery of the base. The properties of circles may be dwelt on, the idea of diameter and circumference gradually evolved.

SUGGESTIONS TO THE KINDERGARTEN TEACHER.

The course of lessons should follow much the same lines as that with the sticks, and in both cases much interesting information may be given about wood and iron.

CHAPTER XII.

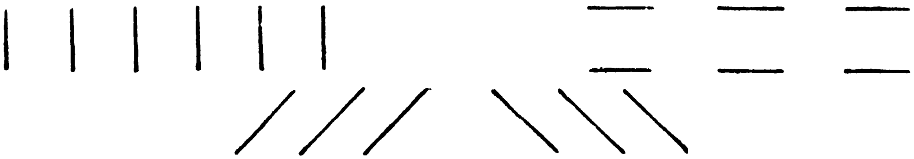
DRAWING.

DRAWING is to a child and an unlettered person what language, spoken and written, is to the adult and the educated, it is a means of expression. In every healthy child its surroundings awaken thought, but unless these thoughts are expressed in some form or other, they are vague and indefinite; they do not give birth to *ideas,* and are profitless as far as the individual and the community at large are concerned.

No occupation conduces more surely than drawing to a habit of clear thinking, and accurate and true expression. It was to help to form such a habit that Froebel made drawing so important a feature in his Kindergarten system. The plan he pursued was as follows:—Supply the child with a chequered slate and pencil, and encourage it to draw lines in different ways on or across the chequers, care being taken that the child says what it has done, *e.g.,* lines vertical and horizontal over one chequer having been drawn from dictation or copy, the teacher would ask the child what it had drawn, and would not be satisfied till a clear and complete answer had been given. A habit of this kind would effectually stop mechanical work, but it would not interest the child for long; something more is needed to make the exercise a pleasurable one, and this can only result from awakening the artistic and imaginative faculty. To do this, Froebel bids us help the child to endow each line with life, by making up little stories about the lines. Let them represent children marching in a row or sitting in a line. Once start the little ones with an idea of this kind, and it is simply wonderful how fertile their imaginations are, how a simple vertical line is to-day father's walking-stick, or to-morrow Jack's whip, and the next day mother's pencil.

Thus, step by step we may lead the child to see how objects and patterns are made up of lines variously combined. The following illustrations will make my meaning clearer :—

No. 1 shows an exercise in straight lines.
No. 2 the same lines used to make patterns.
No. 3 the lines used again to make simple objects.
No. 4 a line exercise in curves.
No. 5 same curves used to make patterns.
No. 6 objects made by using the same curved lines.



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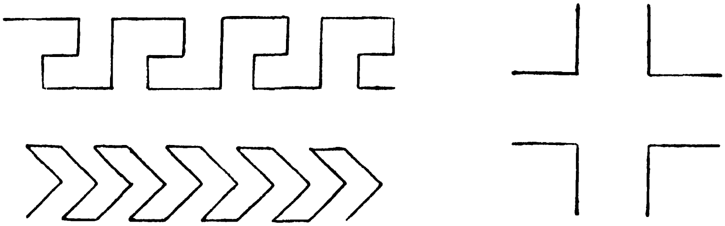

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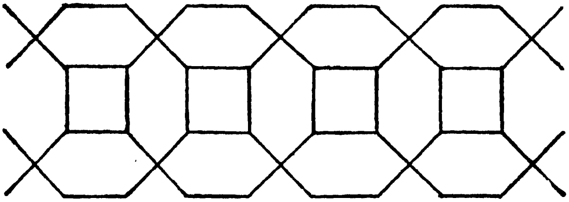

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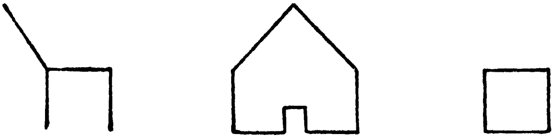

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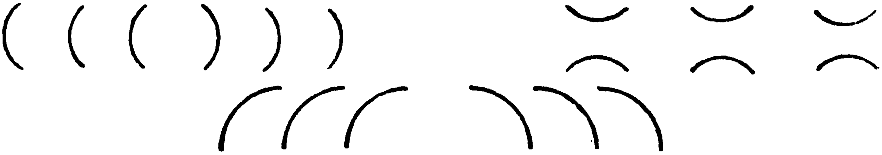

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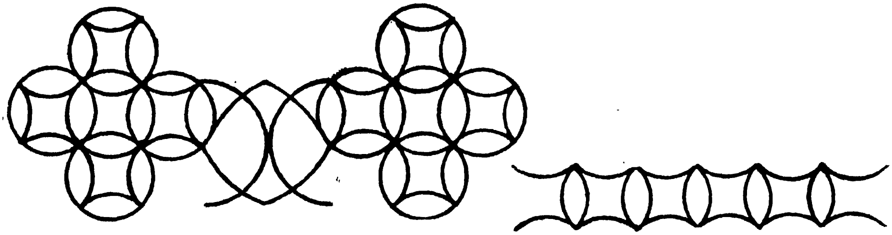

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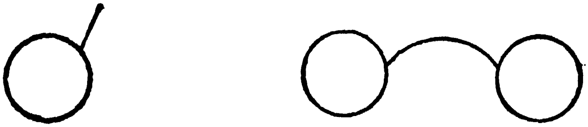


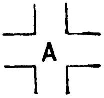
No. 6

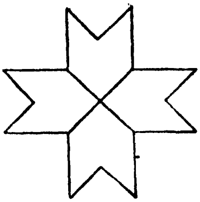
Series A.

Star 1.	Star 4. A development of 3.
Star 2. Contrast of 1.	Star 5. Contrast of 4.
Star 3. Combination of 1 and 2.	Star 6. Combination of 4 and 5.

The same plan holds good for Series *B* and *C*. If shading or coloured chalks or paint are used, really artistic designs are produced, and the number and variety of patterns and star forms are infinite.

SERIES A.





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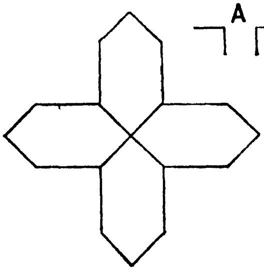

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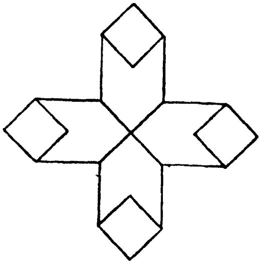

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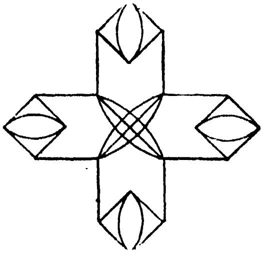

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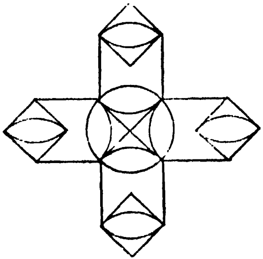

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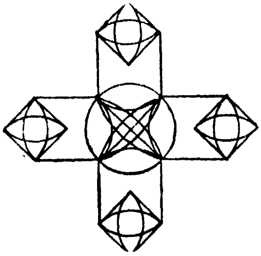

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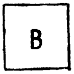
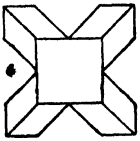
SERIES B.





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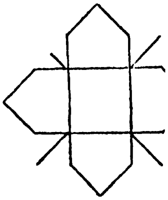

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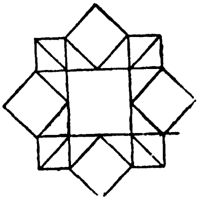

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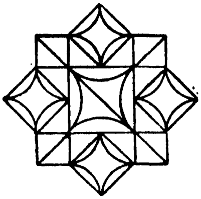

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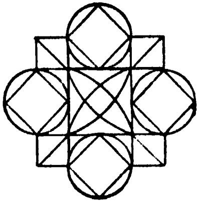

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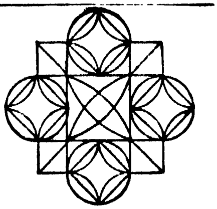

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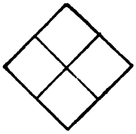
SERIES C.



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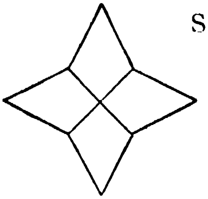

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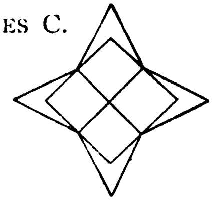

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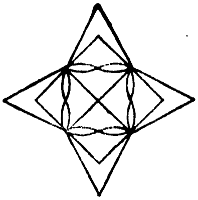


No. 4.

FROEBEL DRAWING.

For older children there is another *drawing course*, which is an excellent training in concentration of attention, in reflection, and in calling out ingenuity—the so-called *Froebel Drawing;* here first straight, and then curved lines of five different lengths are placed side by side, in such ways as to form geometrical figures. (See Figs. A.)

Four of these forms are taken to make fresh designs, and these again arranged and re-arranged in as many ways as possible. (See Figs. B.)

And out of these forms still more elaborate ones are made, which, when worked out on the "Law of Contrast," as was done in the star course, yield a great variety of stars. (See Figs. C.)

These courses can be worked in straight and curved lines, used separately or in combination, and from these lines again we can get fruit, flower, and insect forms, out of which many conventional designs can be made. Space will not allow of my explaining this course more in detail, but if the idea, viz., arranging five lines to form geometrical figures in as many ways as possible, be grasped, and that out of these geometrical figures, by combining four or six triangles, fresh forms be made, is understood, then the plan or idea of the Froebel drawing has been grasped, and little difficulty will be experienced in working the courses out.

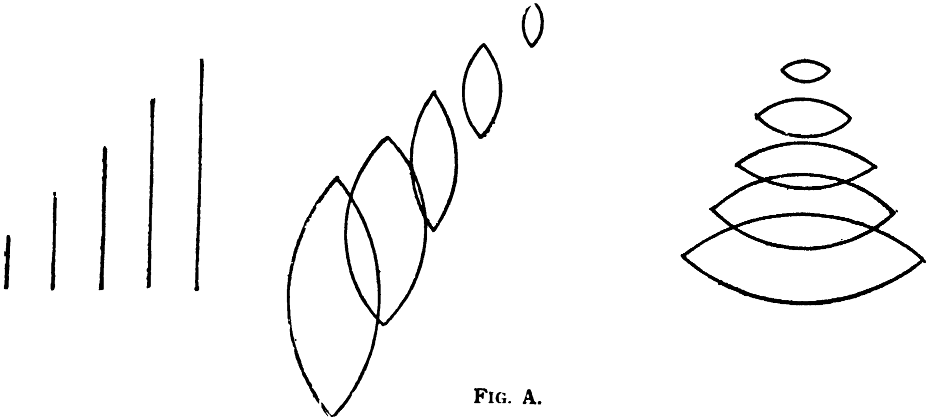


FIG. A.

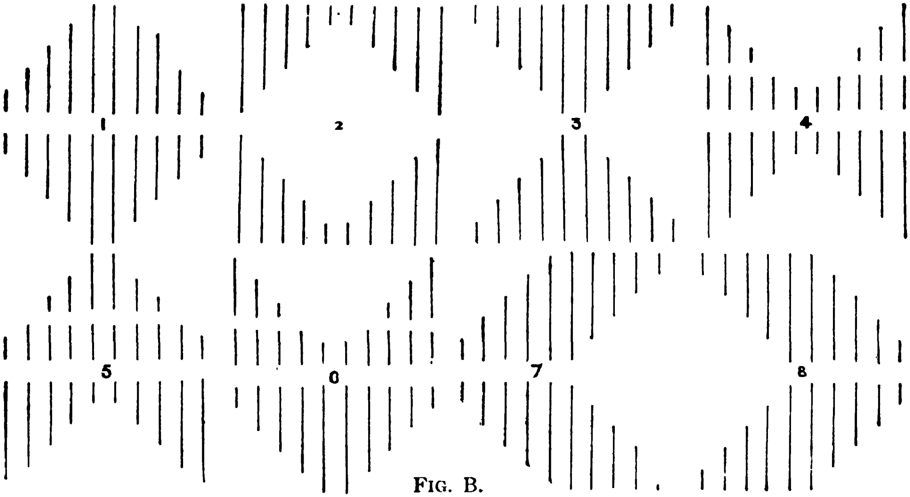


FIG. B.

No. 1. Arrangement of four right-angled triangles.
No. 2. Contrast of No. 1.
No. 3. Different arrangements of the triangles of No. 1.
No. 4. Different arrangements of the triangles of No. 2.
Nos. 5 and 6. Combinations of 1 and 2.
Nos. 7 and 8. Combinations of 1 and 2 again.

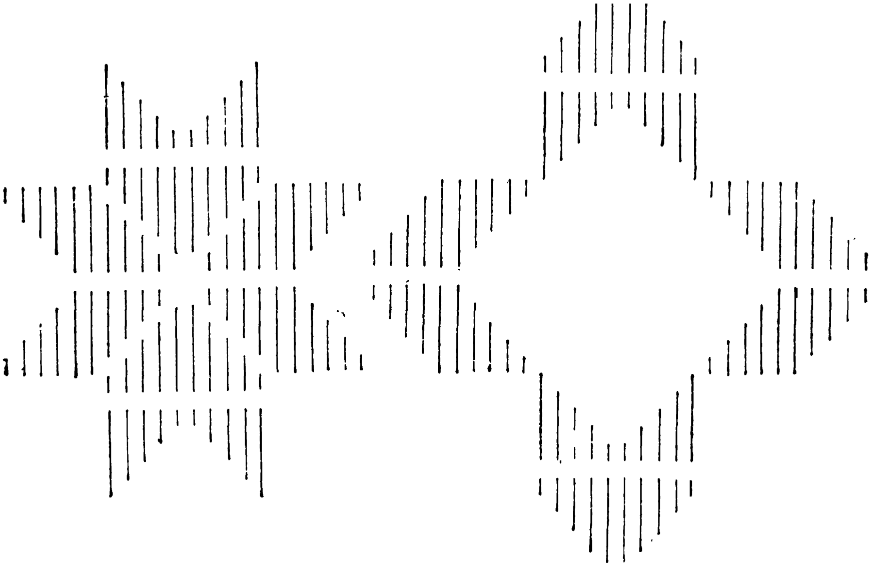


FIG. C.

Star I. Made from forms 5, 6, 7, and 8.
Star II. Contrast of Star I., made with forms 5, 6, 7, and 8.

SUGGESTIONS FOR KINDERGARTEN TEACHERS.

1. Connect stick-laying and drawing lessons.
2. Take elementary drawing, in the order indicated in the chapter on drawing: *a*, line exercises; *b* & *c*, patterns, or objects from those lines.
3. Encourage free invention.
4. Take star drawing, see that the idea of working by contrasts and their links is clearly grasped.
5. Use straight lines first, then curved lines, and then straight and curved lines combined.
6. In teaching the Froebel drawing, only give the principles on which it is worked, and then train the children to apply the principles. Never allow copying.
7. Encourage original work.

CHAPTER XIII.

SEWING.

SEWING is another favourite and valuable occupation. It is possibly the best known of all the Kindergarten occupations. The pretty packets of prepared cards sold at almost every toy shop, the cardboard doll's furniture, and card-houses, to work in pretty wools and silks, have found their way into almost every English home, and have afforded much delight and many hours of occupation to countless little ones. But delightful as this so-called Kindergarten embroidery is, it is not the work Froebel meant to be given to the little ones, it is too mechanical, leaves too little scope for free invention and the exercise of the child's creative fancy, and this was what Froebel meant all his occupations to do. I do not wish to say a word against using the ready prepared cards—the pricked outlines of animals, flowers, and objects—they have their place and use in educating the child; but I want my readers to understand the difference between work of this kind and real Kindergarten sewing.

The materials required for Kindergarten sewing are a piece of thin cardboard or stout cartridge paper, a sheet of chequered drawing paper, a pencil, and a needle, or, better still, a Kindergarten pricker, *i.e.*, a needle in a handle, in appearance much like a steel crochet hook.

The cardboard or cartridge paper should be cut to the size required and then covered very carefully with the chequered paper, and on this paper the child should be taught to draw its own designs. Care must be taken to keep an even margin or border, and to find the centre square or chequer on the card, and then to make the pattern perfectly symmetrical, corner corresponding with corner and side with side.

When the pattern has been carefully drawn, the child should have its pricker given it, and be told to prick a small hole through paper and cardboard at the point where the lines meet. (See Fig. 1.)

This done, to remove the paper from the card, and then to work the same pattern on the card as is seen drawn on the paper.

Of course the patterns must be quite simple at first, and gradually get more and more difficult. Work of this kind teaches the child much, trains its observation and invention, and makes the child self-helpful and self-reliant. The cards, when nicely worked, are most effective, and when prettily made up into cases or trays, and toilet tidies, and baskets, are very pretty presents to give away.

Work of this kind really prepares the way for needlework later. The children have learnt to follow a direction, to carry out a plan, and when they come to sewing and stitching, they are not so hopelessly dependent on having everything prepared and arranged for them, as is, alas ! too often the case.

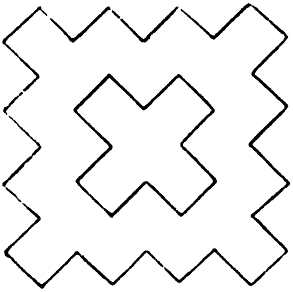


Fig. 1.

SUGGESTIONS FOR THE KINDERGARTEN TEACHER.

1. Let the course follow the same lines as that for the Elementary Drawing, viz.:—

I. Take vertical lines one chequer long.
II. Take horizontal lines one chequer long.
III. Take oblique lines one chequer long.
IV. Combine these three kinds of lines to make patterns and objects.
V. Take vertical curves.
VI. Take horizontal curves and follow the same course as with the straight lines, and then take longer lines.

PATTERNS FOR KINDERGARTEN SEWING.

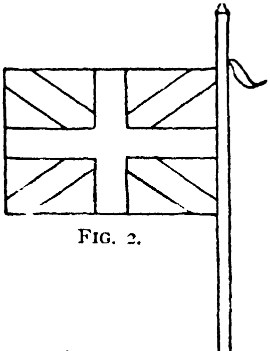


Fig. 2.

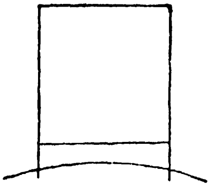


Fig. 3.

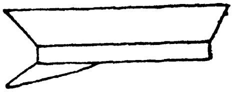


Fig. .4

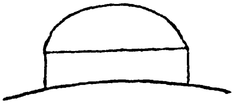


Fig. 5.

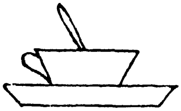


Fig. 6.

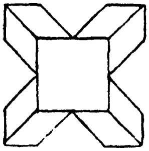


Fig. 7.

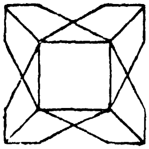


Fig. 8.

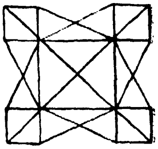


Fig. 9.

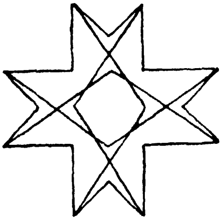


Fig. 10.

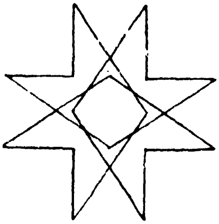


Fig. 11.

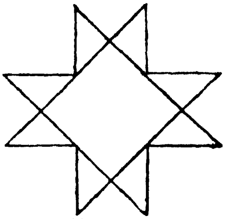


Fig. 12.

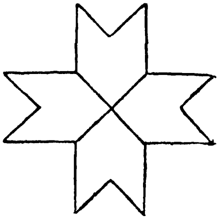


Fig. 13.

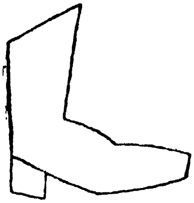


Fig. 14.

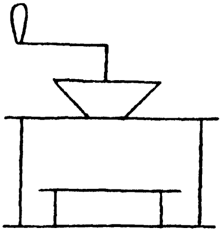


Fig. 15.

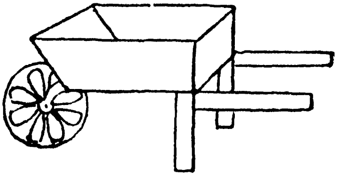


Fig. 16.

2. See that the backs of the cards are as neat as the fronts.

3. Use shaded wools, two and more colours, and so get pretty effects with the simplest lines.

4. Let the lines used in the sewing form the basis for the stitches in plain needlework. Therefore samplers worked on Java canvas should follow Kindergarten Sewing, and these samplers should give place to making garments.

5. With young children each lesson should be preceded by needle-drill, *i.e.*, taking up and holding the needle properly and threading the needle. Large wool needles should be used here.

THREAD-LAYING.

This is a simple occupation for quite little children.

The materials required are a slate, a pencil, and some moist thread.

Crochet cotton, red or blue, is the best to use, as the white soils so soon and does not look well. The moist thread, which has been dipped in water till it is soft, should be twisted into objects and patterns on the slate, the pointed pencil being used to place the thread lines in the position required. If the patterns have been carefully and well laid and left to dry, when dry the thread can be removed and the outline of the pattern is to be seen on the slate.

This occupation is not quite so generally used as some of the others, but children delight in it, and by way of a change it is always welcome to the little ones.

Most of the figures on pp. 106—109 and 116 are suitable for reproduction either by drawing, by sewing, or by thread-laying.

THREAD-DRAWING is another occupation closely connected with those already named. Materials required are Java canvas or coarse linen. Threads are drawn to make patterns, squares, oblongs, or diamonds, and then stitches are worked in coloured cotton in much the same way as Irish drawn linen work is done. The threads drawn out should be turned to account; little dolls' brushes and brooms, or penwipers can be made from them, or they can be used to stuff cushions or dolls' bedding.

PART IV.

POINTS.

CHAPTER XIV.

WE have now to consider the occupations which belong to the group of "points." They are peawork, pricking, or embossing as it is sometimes called, bead-threading, and button-laying. Before explaining the use of each of these occupations, I want to draw the attention of my readers once more to the order and sequence which mark the arrangement of these educational means.

Solid is followed by plane surface, and plane surface by lines, and lines again by points ; thus we find the transition from the concrete to the abstract is gradual, definite, and clear ; but, yet more, we see that each group is connected to the preceding group by a link, which, as it were, bridges over the transition from the one to the other. In the occupation of "peawork" we find this the case; it forms the connecting link between the points and lines.

PRICKING OR EMBOSSING.

A very favourite amusement in the home is pricking or embossing, which is even known in many places where the name of Froebel and his Kindergarten system are unknown ; but, used as Froebel meant it to be, it forms a distinct part of Kindergarten education.

There are two ways of teaching it to children ; one is to give the child an object drawn in outline and to teach it to prick round the outline, taking care to make the pricks all the same size, and to keep them at equal distances apart. (See Fig. 1.)

Another, and a more difficult, but at the same time a more instructive way, is to cover a piece of cardboard or cartridge paper with chequered paper, and to let the child invent its own pattern and prick its own object without the aid of any pencil outlines. (See Figs. 2, 3, 4, 5, and 6.)

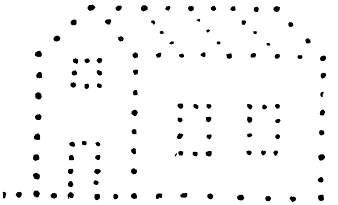


FIG. 1.

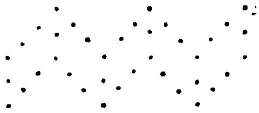


FIG. 4.

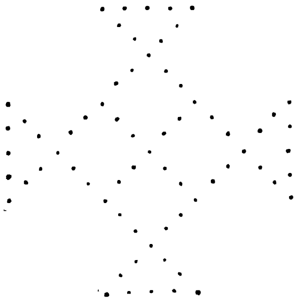


FIG. 3.

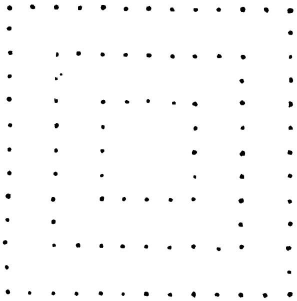


FIG. 2.

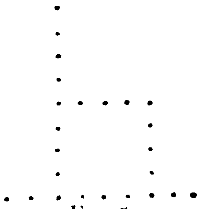


FIG. 5.

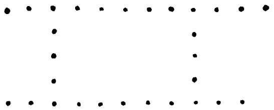


FIG. 6.

The materials required for this work are thin cardboard or cartridge paper, chequered paper, a felt pad, and Kindergarten pricker.

The patterns pricked make up into most natty little trays and baskets, boxes, and toilet tidies; a piece of coloured tissue paper pasted inside adds considerably to the effect.

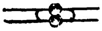
Pricking is an occupation to be used with caution; when pursued by gaslight, or on a dull day, it is decidedly injurious to the eyesight, but when proper care is taken, and the children are not allowed to continue it too long at a time, it is a very pleasant amusement.

BEAD-THREADING.

This, again, is a work little children dearly love, especially little girls, and as a means for imparting elementary notions of colour and number it is invaluable.

The best beads to use are the cut-glass coloured beads and the large round glass beads, sold in bunches at 6d. and 9d., at Hamley's Kindergarten depôt. The beads should be threaded on coarse thread, the ends of which are waxed, or on thin wire, and thus the necessity for using a needle is entirely obviated. It is the needle and the minute size of the beads in ordinary use which has made this occupation tabooed in many a nursery.

With bead-threading, as with other things, the child should be accustomed to work by rule first, and then be left free to use its own artistic taste in combining colour or number variously to form fresh designs. For example, let the first string be of one colour only, the next of two colours, blue and red, or gold and white, alternately ; then another thread might be two beads of each colour, and in this way the variety in the patterns is almost inexhaustible ; the children delight in it, and are eager to find fresh combinations for themselves, and thus their eyes are trained and their fingers strengthened, or, what is most important, they learn to carry out a plan, and later to originate an idea, and then to execute it unaided.

There is another way of threading beads which is more difficult—I mean passing the thread twice through the same bead. Chains similar in design to the single thread chains, can be made like this  These chains, when fastened to cardboard, make very pretty serviette rings and baskets. The beads may also be threaded on wire or sticks, the ends of which are fastened into cardboard or wood. The beadwork can be made into doll's furniture and other useful articles.

BUTTON-LAYING.

Button-laying, again, is a favourite amusement with the little ones. Outlines of objects and figures should be drawn in chalk on stiff brown paper or on mill-board, and these outlines should be covered with white and black agate buttons, and in this way a button picture is made.

The agate buttons are most inexpensive, something like 1½d. a gross, and they can be purchased at almost every linen-draper's.

Button-pictures can also be made in this way. The child is supplied with a piece of chequered paper and invents its own button designs or pictures, or else copies some placed before it. With older children this occupation can also be used by giving the child something to copy in a button-picture on the table. A considerable amount of care and deftness of fingering is needed to lay the buttons straight. The child must learn to use the tips of its fingers, and the baby hands have to be steadied, which alone needs practice before the little one can accomplish its little task. All the time the child is being trained to be patient and persevering and painstaking, invaluable lessons for after life.

BEAD, BUTTON, SHELL, SEED, AND BEAN WORK.

Any material of this kind can be used for numbers and form teaching. The lessons may be as follow:—

1. A tray filled with these things may be given to the young child, and then the objects sorted on to a slate or into paper trays;
2. Then rows of beads, or buttons, shells, or seeds should be made;
3. A definite number of each is then to be picked out, say, two beads, two buttons, &c., and the child made to say what it has done; *e.g.*, "I have picked out two blue beads, two buttons," &c.
4. Chalk pictures could be drawn on the table or slate, and these could be covered with buttons, or shells, or beads.

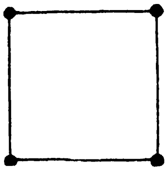
The advantage of occupation of this kind is that it teaches the child to sit still and work; it also trains the child to finish a thing once begun, a lesson all important for our little ones to learn.

PEAWORK.

We will now consider "peawork." As an occupation it is an immense favourite with children, and when properly used may be made a most instructive pastime as well. The child may, in its play, be led to see that by combining lines in a regular way the outlines of plane surfaces are formed, and further, that the outlines of solids are but combinations of plane surfaces. This point I shall, I trust, make somewhat clearer when I come to illustrate my remarks a little further on.

The materials required for peawork are some round pointed sticks of different lengths, and some ordinary dried peas: the peas need soaking in cold water for from twelve to eighteen hours before use. The simplest exercise for the tinies is to stick a pea on each end of the stick; this is not quite such an easy matter to a child as it appears to elders; great care is needed to get the stick in quite straight, and not to put it through too far and so split the pea; but a little patience, and a hint about looking for the tiny white swelling on the pea as the best point to fix the stick, and all goes well.

As soon as the child can manage this little exercise it may be taught to make the outlines of the different geometrical forms, such as the square, oblong, triangles of different kinds, &c. (See Figs. 1 to 5.)



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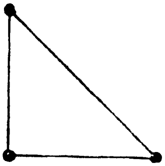

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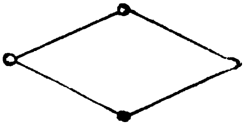

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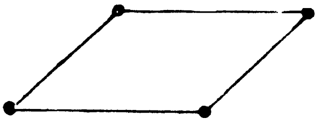

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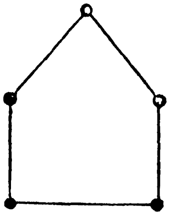

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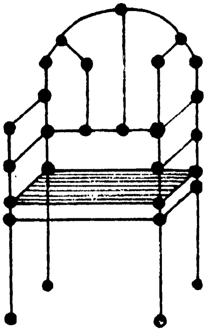
These forms mastered, the child should next be taught to combine them with the outlines of solids, the squares making the cube, and the triangles different-shaped triangular prisms, and then the child will delight in discovering that by the addition of a stick or two a pretty set of doll's furniture can be made (See Figs. 6 to 9.)



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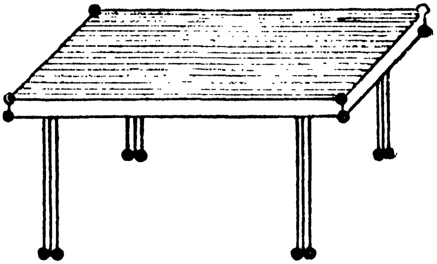

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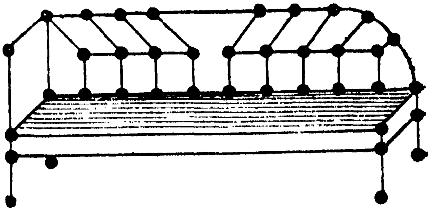

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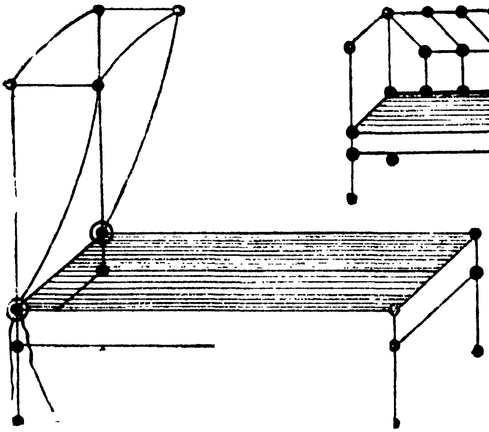

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An additional charm is added to the furniture when squares of paper are fastened to make the seats of the chairs and the tops of the tables and footstools. This makes the little articles more substantial, and more correct imitations of the child's own nursery chairs and tables.

Using coloured sticks also adds to the effect, and the tiny furniture is made more lasting, if, as each article is completed, it is brushed over with a solution of gum or white of egg, as this hardens the peas and sets the sticks firmly into the holes, besides adding a polish to the whole which enhances the charm to the tinies.

The same kind of work can be done with little metal clips (such as are sold at Hamley's, 64, Regent Street). These clips are used instead of peas to fasten the sticks together; the shape required is obtained by bending up the metal clip to the required angle.

Whether clips or peas are used is more or less immaterial in either case; the perfection of the work depends on the careful way the child measures the sticks and gets them exact, and the neatness and accuracy with which each part of the work is executed. Any inaccuracy mars the whole. We find the tables won't stand, and the chairs topple, and the poor dolls will have a poor chance of comfortable seats on sofas.

The thought is often pressed home to me, that if mothers would more often help their little ones to make their own toys, not only would they save much money, which is often a great consideration, but the children would learn to appreciate their toys more, because each would be the result of effort and painstaking work on their part, and would speak of much loving sympathy and help given by mother or elder sister; and in this simple way the love-bond, which ought to bind mother and child, elder and younger members of the family together, would be strengthened and cemented, and thus not merely would an increase of present happiness be ensured in the homes, but a link would be forged to bind parents and children, brothers and sisters, more closely together in the future.

PART V.

PLASTIC MATERIALS.

CHAPTER XV.

SAND-PICTURES.

UNDER the heading Plastic Material we have two very favourite occupations with the little ones—sand work and clay modelling. Froebel, student as he was of child-nature, saw the pleasure children derived from playing with sand and clay; he saw that the delight each little child experienced in making mud pies and sand castles was not merely due to the pleasure the little ones feel in making a mess, but that it was due to the fact that these materials afforded the child just the means it wanted for giving tangible expression to its thoughts; *i.e.*, for expressing in a concrete form the thoughts and ideas forming themselves in the little mind. This want is one most keenly felt by little children, but it is one far too little attended to in the ordinary home and school-room, and the result is disastrous not only to the future health and vigour of the mind, but to the child's present well-being, both physical and mental. Again, it is during the first few years of life that the child's conceptions of beauty, truth, virtue, and uprightness or their opposites are being formed, and parents and educators will do well to remember and ponder on the truths on which Froebel laid such emphasis in his writings: (1) that *abstract* conceptions are impossible to little children; first must come the concrete representation of the idea; this must be again and again repeated till the impression has so become a part of the child that it can be recalled at any time by an effort of memory; and (2) that we can tell by what the child *does*, far more than by what it *says*, how far it has grasped and understood what we have wished to impress on it. But to return to the occupations themselves. Sandwork is an occupation particularly adapted to quite tiny children. The materials required are some silver sand, a low flat tray, such as cooks use for open pastry, or the old-fashioned tea-tray, and a box or boxes of wooden or tin toys. The sand is better when made slightly moist by being sprinkled with water, as then the toys stick in it more firmly. The freer the child is left to play with the sand and toys the better ; all that is needed is that we elders suggest things to do, such as " Make me a nice sand-garden," or, " See if you can make a picture of the fields, and the pathway through the fields, where we often go for a walk," and then give a little occasional help as we see it is needed, and show a proper amount of interest in the work when it is finished. I have seen quite tiny children of three or four years make really pretty sand-pictures, often illustrative of some story I had told them, or of some picture or place we had been looking at together. Another way to use this sand-play is to make drawings with sticks and rings, such as are made on the table with the little Kindergarten sticks and rings and tablets. The advantage of making the pictures in the sand is that they can be kept more easily. The stick when once placed is not misplaced by a breath or hasty movement of the little arm, which is too often the case in making stick pictures on the tables, and is often a great source of annoyance and discouragement to the little child, who is tempted to give up in despair when time after time it sees its work disarranged, its little efforts, very real as they are to it, made to appear all unavailing. Further, the first exercise in writing, by making the alphabet either with sticks or rings, or by tracing the outlines of the letters in the moist sand, is a capital exercise for the little ones. When thus amused they learn almost unconsciously, and the first steps in knowledge are taken gladly and eagerly, instead of being associated with tears and sighs. Moreover games like these, while leaving the child free, at the same time require that the play shall not be purposeless, aimless, and therefore useless as a training of character, but rather may help to form in each child the habit of having some definite aim or purpose in all he does, and of going directly and surely but gradually the best way to accomplish the end in view.

CLAY MODELLING.

Clay Modelling is an occupation suited to rather older children than most of the Kindergarten occupations. About five or six years of age is the best time to introduce the child to this work. The materials required are some prepared pipe-clay, such as can be bought at any sculptor's, a wooden knife or knives, and a wooden board, or plate of lead or slate. The clay, knives, and boards can be bought at a Kindergarten depôt at a small cost.

This occupation is rather a messy one, so it is well to cover the table with a large sheet of newspaper or an old cloth, and to put on a large over-all pinafore with long sleeves. These precautions taken, leave the little one free to play at will with its clay; it is most interesting to watch the ways different children set about using the clay. When the interest begins to flag a little, is the time for mother or nurse or elder sister to join in the work.

Just show the way to break off a small piece of clay from the large lump, and then roll it in the palms of the hands into a ball; it is not easy at first to get the ball perfectly round, and then the clay often gets very dry in the hot little hands, and cracks. But if the child is taught to moisten its fingers in a little cold water, and then press out the cracks they quickly disappear, and with a little perseverance the clay ball is accomplished, much to the delight of the little worker. Then out of the ball the child should be taught to make a variety of objects, such as the bird's nest with eggs, apples, plums, oranges, and many other kinds of fruit. Even, a round basket to hold the fruit can be made. Additional pleasure and interest in the work result when the little one is allowed to paint its clay model. If the paint is mixed with a little gum it shines, and this again helps to make the clay models more life-like and real. When the child has exhausted all the simple objects which can be made from the ball, it should be shown how to make a cylinder from a ball. The way to do this is to let the child first make its ball, and then roll it out on its board like cook rolls out the dough on her pastry board. Children perfectly delight in doing this. To roll the clay evenly is not very easy. The palms of the hands and not the fingers must be used. When the roll is long enough the child must be taught to flatten the ends by beating them gently against the board.

Out of the *cylinder* the child can make the garden roller, the pillar, the letter-box, the sack of corn, the funnel of an engine, and also the pencil, pen, walking-stick, whip, and ruler, besides several kinds of fruit and vegetables, such as the banana, peapods, carrots, a long turnip, and a stick of rhubarb. Once suggest the possibility of modelling these objects from the cylindrical form, and you will be astonished to notice how readily the child finds fresh objects; and if, as ought always to be the case, the real object is there to be copied, the child delights in discovering minute points of difference, and to observe very accurately the chief features which distinguish one object from another. Play like this is of real educational value: the little one is learning to observe accurately, then to reproduce what it observes; and this power of observing, and then reproducing what has been observed, is one of the most healthful signs of true mental vigour and intellectual growth.

The next exercise is to make the cube. This is more difficult than to model the cylinder. To get the six square surfaces is not easy and requires much patience, but if children have done the simpler exercises and have become interested in clay modelling, they gladly make this effort and really very soon produce most creditable clay cubes.

Out of the cube can be made the travelling trunk, Gladstone bag, chest of drawers, chair, arm-chair, sofa, &c. To make many of these objects the child needs to use its modelling knife to cut away some of the clay: the pieces cut off should not be wasted, but rolled together into a ball and used to make some other objects.

Next a slab of clay should be made, and on it fruits, flowers, leaves, &c., should be built up. This kind of modelling is more difficult, but when it follows the other kind of modelling children manage it very fairly.

CLAY AND SAND ON WAX

should be used to make illustrations for *Geography Lessons; e.g.*, when giving a lesson on a river, its source, bed, banks, and mouth could be modelled, or when teaching the different parts of land or water, models could be made, and then such terms as isthmus, lake, island, cape, &c., represent real things and are no dry meaningless words to the child.

SUGGESTIONS TO THE KINDERGARTEN TEACHER.

I. Take the ball, cylinder, and cube as the three foundation forms for all models.

II. Let the hand and fingers be the only tools used at first, modelling tools should be given later.

III. Clay should be kept in a basin covered with a damp housemaid's flannel. It is fit for use when it can be cut cleanly with a knife, wire, or string, and does not stick to the hands. If too moist, exposure to the air for a short time will suck up the superfluous moisture ; or if hard and dry, it should be broken into smaller pieces, have water poured over it, and then be kneaded much as bread is, till fit for use. Objects modelled should be left to dry gradually.

CHAPTER XVI.

CONCLUSION.

KINDERGARTEN GAMES AND SONGS.

INDERGARTEN games and songs form another distinguishing feature in the Kindergarten system of education.

In its play with the gifts and occupations, the child has worked alone, more or less. Each thing accomplished was due to individual effort, being more or less the result of the child's own work. Now Froebel, greatly as he valued and prized individual work, felt it was not everything ; no, if the education was to be a perfect training for life, the child must learn to work with and for others, for the accomplishment of some joint aim ; it must learn to sink its own individuality in that of the class and of its companions, and to do this involves learning to give and take readily, gladly, and freely; to be content to form one of a number; to be unnoticed; and these are hard lessons for children to learn, yet they are most important ones. It is just these lessons that the child learns when playing the Kindergarten games. The games themselves are simple, and when properly played are most effective, and for these reasons: the movements are rhythmic and graceful, they are accompanied by a song, the words of which explain the meaning of the movements, and besides, each game is a small dramatic entertainment. In each game is acted out some lesson learnt, some fact in nature, which the child has noticed with interest, and now seeks to express in another form.

As *physical* exercise, these games are excellent; far better than dancing, drill, or any other fixed mode of gymnastics for little children. The song expands the lungs, it also causes gladness and joy to the little ones, and thereby conduces to the child's physical well-being. Whilst playing these games the child's *mind* is exercised; it learns to think, and then to express its thoughts, and, further, the moral side of the child's nature is cared for; it is learning to be unselfish and thoughtful for others, and to do its best, not for some personal gain, but just for the sake of others.

These games may be classified as follows:—

1. The "*Mutter und Kose Lieder" Games* (or finger and hand games), which are taken from Froebel's Mother's Book: the very simplest form of play for the infant being, as the name denotes, little hand gymnastics to be done and sung.
2. *Ring Games:* when the teachers and children all join hands in a ring, and dance round to music.
3. *Marching Games:* here the children march to music, and out of these marches come the many pretty Kindergarten dances.
4. *Action Games:* described above.
5. *Ball Games:* described partly in the chapter on Gift I. These games can be enlarged and expanded, and be made to lead up to Miss Chreiman's effective ball gymnastics.

I must recommend my readers to buy one of the little song-books sold at Hamley's Kindergarten depôt. The little 1s. 6d. book by Madame

Michaelis and Mrs. Berry is very good, and so is also Miss Heerwart's 2s. 6d. book, and its 1s. sequel. Misses Mulley and Tabram's little 1s. book is very full of pretty songs and games, but for quite little children nothing is, I think, better than the true Froebel songs and games which we find in the "Mutter und Kose Lieder," which book every true mother ought not only to possess, but to study deeply and repeatedly, and to use freely when playing with her children.

It is well, when children are older, to encourage them to make up their own games; almost any story—fairy tale or other story—may serve as the basis for a game. It is astonishing how quickly children learn to make up little verses and rhymes, and to find tunes to suit. This is an inexhaustible form of amusement for the elder children, and the games thus arranged are played with great zest by all, young and old alike.

STORIES.

There remains yet another feature of Kindergarten training on which I should like to say a few words: I mean the place Froebel gives to "*Stories*" in his system.

Froebel would have the *story* made a prominent feature in the week's lessons; round it should centre all the other teaching, games, songs, occupations, and gift lesson—all should be the direct outcome of the story; in this way the child would (1) learn to *associate* things together; an impression received in one way would be given forth in another, and thus indirectly the *connectedness* of all things in the world would be emphasised.

(2) The story appeals directly to the *imagination;* it takes the child out of itself, is to its mental nature what eating and drinking are to its bodily nature, a means of nourishment and sustenance.

(3) The story introduces the child to *another world;* when skilfully selected and told it may be the means of much indirect *moral* teaching and *intellectual development,* enlarging a child's *vocabulary,* laying the foundation for history and literature lessons later.

(4) Out of the story *easily grow* the natural history and object lessons,

which are prominent parts of the Kindergarten curriculum for older children.

It was by means like these that Froebel would have the child's first religious aspirations, the first stretchings of the soul after God awakened. In or through such teaching God's nature and work was to be brought vividly before the child, and he was to be accustomed to listen to the voice of the All-Father speaking in and through the world He had made. Teaching of this kind would lead up to direct and more formal religious instruction, so that when doctrinal teaching came to be given, it would satisfy a real want felt, and be to the child the expression of a truth which was real.

CONCLUSION.

The Kindergarten system of education, when rightly used, supplies the many-sided wants of child nature, develops all the faculties gently, systematically, and perfectly, and places the child in a position not only to work for itself, but also to work for the good of others.

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Wholesale and Retail Toy Merchants and Importers,

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Head Warehouse, Wholesale & Export, 86-87, High Holborn, London, W.C.

Price List of Appliances and Materials required for the Kindergarten System of Education.

Kindergarten Chair, of special hygienic construction 5/-

Kindergarten Table, height suitable for above Chair, ruled indelibly in 1 in. squares—24 in. by 24 in., 15/-; 48 in. by 24 in., 25/-; 72 in. by 24 in. 35/-

Tablet Laying, in box complete 5/-
(1) Square Tablets. (2) Right-angled Triangles. (3) Equilateral Triangles. (4) Obtuse-angled Triangles. (5) Scalene Triangles of polished wood, in two colours, in boxes .. .. .. each

Mosaic Cube Amusement
Mosaic Designer .. ..
Italian Mosaics .. ..
Ball Mosaic or Bead Pictures
Figure Laying .. .. ..
Alphabet Box 2/6

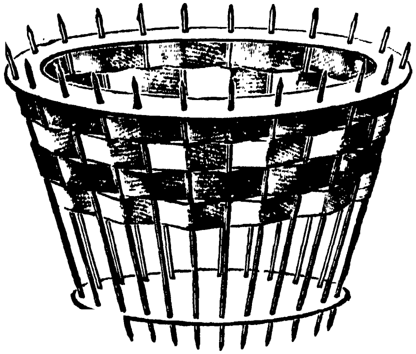
Paper Folding, box complete 2/6

Squares of Paper, 4 ins. square, per packet of 100 .. 6d.

Paper Cutting, box complete 3/-
Round-Pointed Scissors .. .. .. per pair 5d.
Paste and Brush .. .. 6d.
Teachers' Albums (for pasting patterns) .. 1/6, 2/6

Chalk Work and Colouring. Outline Studies for Chalk Drawing .. .. .. per packet 4d.
Crayons, in boxes.. .. .. per doz. boxes 1/-
Coloured Chalks, in cedar .. .. per box 6d.
Paint Boxes .. .. each 1/-, 2/6

PLAITED BASKET.



Basket Work. Fancy Basket Worker, Series I. .. 3/-
Ditto, Series II., 3/-; ditto, Series III. 3/-
Bead Basket Worker 3/-
Prepared Cane for "Cane Weaving," per ½-lb. bundle .. .. 1/- and 1/3
Book of Illustrations .. .. 6d.

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Plaiting Needles (wooden) .. per doz. 6d. and 9d.
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Stick Laying .. .. per box 1/-
Sticks, ready for use, round, white, 12 in. per 100 3d.
Ditto, coloured, 12 in. .. .. .. " 6d.
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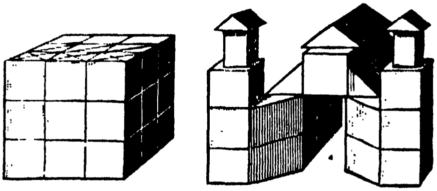
Paper Twisting .. .. per box 1/-
Paper Strips, various bright colours .. per packet 6d.

Ring Laying. Box complete with 2 doz. Rings and 4 doz. Half-rings .. .. .. 1/- and 2/6
Circles and Half-circles—
Box of 3 doz. Circles, 1/-, 2/-, 3/-; ditto, ½-Circles, 6d., 9d., 1/3; ditto, ¼-Circles .. 6d. and

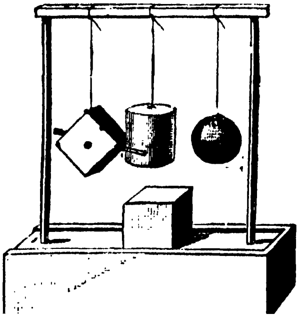
KINDERGARTEN GIFTS.

FIRST GIFT.



Gift I. .. .. each 1/-, doz. 11/6
Gift II. .. .. " 8d., " 7/6
Gift III. .. .. " 4d., " 3/6
Gift IV. .. .. " 4d., " 3/6
Gift V. .. .. " 8d., " 7/6
Gift VI. .. .. " 8d., " 7/6
Complete Gifts I. to VI. and VB... .. .. .. 4/6

SECOND GIFT.



Price List of Appliances and Materials required for the Kindergarten System of Education.

Drawing. Chequered Slates	per doz.	5/-
Prepared Slate Pencils	per gross	3/-
Drawing Pencils	per doz.	10d.
Chequered Paper	per quire	1/-
Cartridge Paper		
Slate Drawing School		
Chequered Drawing Box		3/6
Card Stencil Box		1/-
Stencil Drawing Cards	per doz. pkts.	5/-
Sewing. Stepping Stones to Embroidery,	per packet 4d., 8d., and	1/-
Pricking Needles	per doz.	1/-
Felt Pads	,,	2/-
In box, complete with Designs, Pricker, and Pad		3/6
Geography made easy, per packet of 12 Maps		1/-
First steps in Geography. Box complete with Maps, Pencils, Wood, Pricker, and Pad		3/-
Pricking and Embossing. Pad, Pricker, and 12 Cards in box		2/6
Prickers	per doz.	1/-
Felt Pads	,,	2/-
Bead Threading. Boxes of Beads, assorted kinds and Colours		1/-
Large Round Beads	per bunch	6d.
Box containing 12 small boxes of Mixed Beads		1/-
Pea Work. Box containing Peas, Sticks, & Models		1/-
Peas	per box	
Wood and Cork Worker, in box complete		
Extra Corks, per box of 250		
Pointed Sticks, 3 lengths	per box	9d.
Ditto, 5 lengths	,,	1/6
"The Little Joiner"	3/ and	4/6
Clay Modelling. Box complete, "The Little Modeller"		4/-
Clay Powder	per 4-lb. box	1/-
Modelling Clay, grey	,,	1/-
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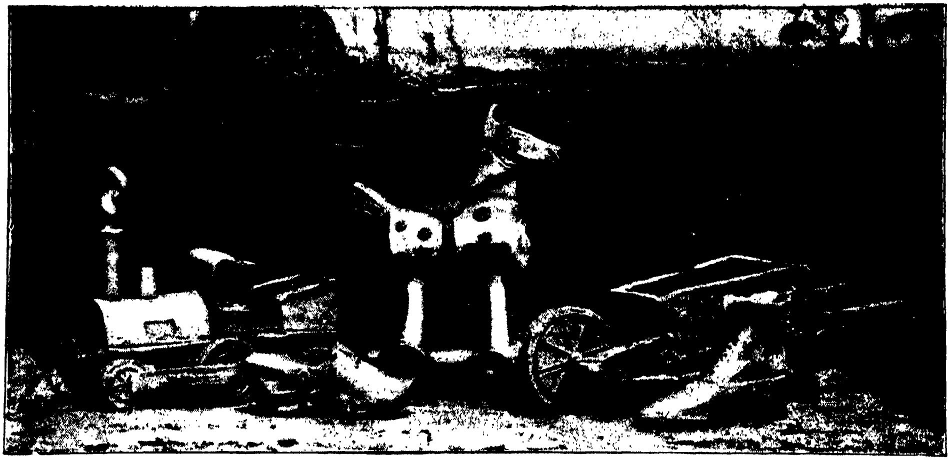

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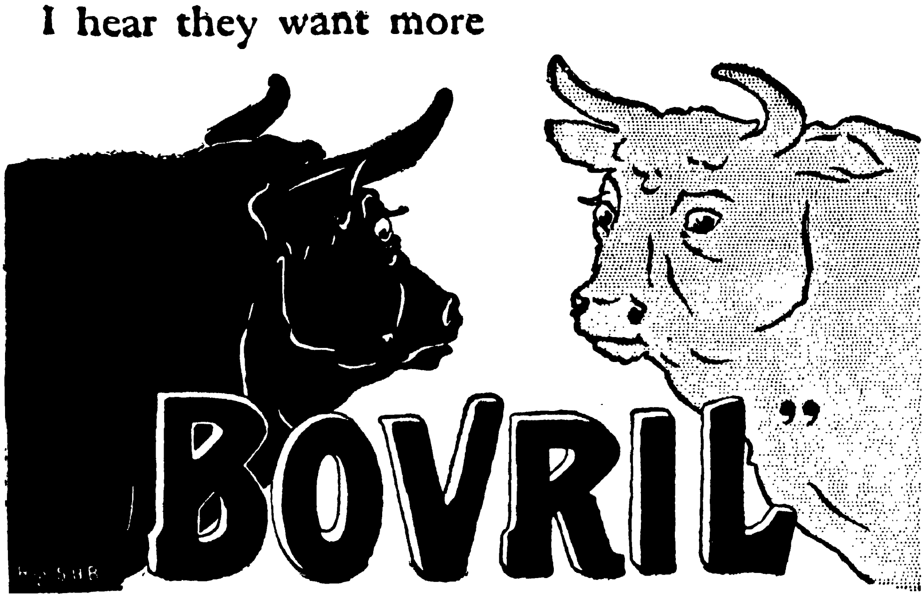
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